

## NEW PHILIPPINE INSECTS.

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(From the Entomological Section of the Biological Laboratory, Bureau of Science.)

The insects described as new in this paper were encountered while I was pursuing investigations upon the ones which injure the coconut palm. With one exception, that of *Thosea cinereamarginata* n. sp., they belong to the Coccidæ. Although twelve species of the Limacodidæ, including three of *Thosea*, are recorded from the Philippines, this number is small in comparison with those from neighboring regions, Hampson recording 82 species in his Fauna of British India.

### LEPIDOPTERA.

#### LIMACODIDÆ.

##### *Thosea cinereamarginata* n. sp.

*Thosea*, *Walk. Cat.* (1855), 5, 1068.

Aphendale, *Walk. Cat.* (1865), 33, 494.

Anzabe, *Walk. Cat.* (1855), 5, 1093.

Male: Head, thorax, and abdomen dark-brown; latter transversely banded dorsally with lighter brown. Two dorsal and anal tufts dark-brown. Tegulæ white-tipped. Fore-wing satiny dark-brown with purplish effulgence in certain lights. A moderately large darker spot at end of cell with a dark-brown oblique sinuate band beginning slightly posterior to it and extending to middle of inner margin; a similar, inward-curving, post-medial band beginning widely on costa before apex and extending nearly to posterior angle. Cilia attenuately spatulate, bronzed at tips and lighter than wing. Hind-wing grey-brown; veins and a discal spot slightly darker. Cilia slightly lighter. Under sides of wings grey-brown; fore-wing pearly at base and inner marginal area; hind-wing irrorated with dark-brown, scattered scales. Antennæ darker at base; first joint with long cilia. Palpi pale anteriorly. Tibiæ, tarsi, and venter with long, grey hairs. Length, 12 millimeters. Length of wing, 9.5 millimeters.

Female: Head, thorax, and abdomen brown-grey, latter transversely marked on apical dorsal margins of 5 to 7 segments with light ochraceous hairs. Fore-wing, except outer fourth, purplish brown-grey. Dark-brown spot at end of cell and an oblique dark-brown band as in male but much more distinct. Post-medial band parallel with outer margin for one-half its length, then curved inward and ending before posterior angle. Marginal area mouse-grey, irrorated with few, dark-brown scales. Cilia and hind wings as in male but latter with a light, clearly defined marginal line. Anal tuft with black-tipped hairs. Under side of wings

as in male. Legs with white-tipped, grey hairs. Antennæ and palpi dark-bronze brown. Length 12.5 millimeters, length of wing 11.25 millimeters.

Habitat: Manila (Banks Coll.).

On *Cocos mucifera* L.

Types of male and female: No. 4888 in Entomological Collection, BUREAU OF SCIENCE, Manila, P. I.

HEMIPTERA.

COCCIDÆ.

DIASPINÆ.

**Chrysomphalus propsimus** n. sp.

*Chrysomphalus* Ashm., *Am. Ent.* (1880), 3, 268.

————— *Orange Ins.* (1880), 21.

————— Leon., *Riv. Pat. Veg.* (1899), 7, 198.

*Aonidilla* Berl. e Leon., *Riv. Pat. Veg.* (1895), 4, 77.

————— Idem. (1899), 7, 174. Type *aurantii*.

s. g. *Melanaspis* Ckll, *Bul. T. s. U. S. Dep. Agr.* (1897), 6, 5. Type, *obscurus*.

s. g. *Mycetaspis* Ckll. *Bul. T. s. U. S. Dep. Agr.* (1897), 6, 5. Type, *personatus*.

*Inspidiotus* Barreda, *Boll. Com. Parasit. Agr.* (1901), 229.

*Chrysomphalus* Fernald, *Cat. Coc. World* (1903), 285.

Type: ficus.

Female puparium (Pl. I, fig. 2) circular, convex, 1.5–2.5 millimeters in diameter, dark-chocolate brown, grayish at margin. Pellicles (Pl. II, fig. 2), dark-golden orange, covered with white, waxy film in perfect specimens; central or subcentral; a small tubercular prominence at center of first pellicle, surrounded by slight depression. Margins of pellicles lighter than disc, which is scabrous. Ventral scale exceedingly thin, white, waxy; often remaining intact upon leaf after upper scale has dropped off and giving the surface a moldy appearance. Male puparium (Pl. I, fig. 3), 0.75–0.90 millimeter long, obtuse-oval in outline; of same general color as female; pellicle slightly eccentric or near one extremity and dark-orange. Adult female (Pl. II, fig. 1): 1.05 millimeters long, 0.90 millimeter wide, nearly circular in outline, except posterior area, which is sharply prolonged to apex of pygidium; yellow; mesothoracic margin very slightly thickened and bearing a spine, minutely denticulate at its base. (Pl. II, fig. 4.) Pygidium (Pl. II, fig. 3) acute laterally; the 6 lobes subequal in size and each having an acute exterior tooth; squames deeply compound and fimbriate, 2 in mesal, first and second spaces, and 3 in third space beyond third lobe. Beyond last squames, margin is thickened and minutely denticulate, dentations in a continuous group, thus differing from *Chrysomphalus aonidium* Linn., to which the scale is most closely related. Margins of abdominal segments quite markedly lobed, each bearing a spine. Two spines at base of pygidium on each side. Circumgenital glands in 4 groups, the posterior with 4 and the anterior with 6 to 8 orifices. Genital aperture between posterior pair of glands. Dorsal pores of tubular segments in 2 subparallel series on each side, containing 18–23 orifices, extending halfway to base of pygidium. Entire margin of insect exterior to pygidium, minutely serrate, with slender spines at irregular intervals. Anterior spiracles opposite middle of rostrum, posterior halfway between rostrum and base of pygidium.

Adult male (Pl. I, fig. 1) 0.88 millimeter long, including genital style, very stout; wing 0.60 millimeter long, yellow; apodema darker; eyes crimson-red and occupying nearly entire head. Antennæ nearly as long as body, exclusive of the

style which is 0.27 millimeter long; antennal segments having long hairs; tarsal claw long, slender, spiniform with apex curved.

Eggs, yellow, 0.15 millimeter long.

Young: Yellow, 0.18–0.20 millimeter long, 0.13 millimeter wide.

Habitat: Philippines, Manila; San Miguel de Mayumo, Prov. of Bulacan (Banks Coll.).

On leaves of *Cocos nucifera* L., both surfaces.

Type: No. 10164 in Entomological Collection, BUREAU OF SCIENCE, Manila, P. I.

This species is so like *C. aonidium* L., that I hesitated to call it new, but the color of the puparia and pellicles of male and female and the difference in pygidial characters make the necessity for its separation as a new species quite evident.

**Parlatoria greeni** n. sp.

Parlatoria Targ., Catalogue (1869) 42.

————— Sign., *Ann. Soc. Ent. Fr.* (1869) (4) 9, 450.

————— Green, *Coccidae Ceylon* (1899), 162.

————— Fernald, *Cat. Coc. World* (1903) 318. *Et al. in litt.*

Type: *lucasii* = *ziziphi*.

Female puparium (Pl. III, fig. 1) pale to dark-slate color, lighter at margins; of a regular, broad-oval; 1.35 to 1.65 millimeters long, 0.90 to 1 millimeter wide. First pellicle broad-oval, narrow in front; of a transparent, yellow-ocher, having a broad, emerald-green, median, carinated band from front to hind margins. Second pellicle circular, except for squames at posterior extremity; of same color as first pellicle; with a broad, subtriangular emerald-green median band from anterior margin to disc and transverse, oval patch of the same color at posterior extremity. Pellicles at anterior extremity of puparium and occupying, in old specimens, slightly less than one-half total length. Their axes seldom in line with main longitudinal axis of puparium. Ventral scale a mere flange one-sixth the width of the puparium.

Male puparium (Pl. III, fig. 2) 0.87 millimeter long, 0.26 millimeter wide, of a dirty-white; sides parallel, carinate; posterior margin rounded, posterior area flattened. Pellicle similar to first pellicle of female, tipped forward at an angle of 45 degrees.

Adult female (Pl. III, figs. 4 and 4 A) (living specimen): Broadly elliptical in outline; head tapering; body broadest across posterior three-fourths. Length 0.60 millimeter, width 0.45 millimeter, somewhat smaller than second pellicle, beneath which it lies. Discal area swollen. Marginal area flattened. Margin minutely serrated. Abdominal segments quite distinct, less so at margin. Disc, dark-purple, marginal area lighter, almost white in certain points. Pygidium pale-ocher tinged with purple. Anterior pair of spiracles slightly posterior to line across base of rostrum and each two-thirds of distance from rostrum to margin; posterior pair, each at a point posterior to apex of rostrum, equal to length of latter and one-third distance from median line to margin. Skin transversely papillate. Tip of rostrum ocher, base paler, nearly white, length of rostral setae one and one-half times that of body. Margin bears on each side isolated spines not exceeding 6, and a spinous tubercle at a point opposite apex of rostrum.

Pygidium (Pl. III, fig. 6) evenly rounded posteriorly. Lobes and squames (Pl. III, fig. 5) of about equal length, tips of squames very slightly longer. Six principal lobes subequal in size, tridentate. Rudimentary lobes distinct, cuspid, one-half the length of principal lobes. Order of arrangement of lobes, squames, and spines from mesal space as follows: 1 squame, 1 lobe, 2 squames, 1 lobe, 1 squame,

1 spine, 2 squames, 1 lobe, 1 spine, 1 squame, 1 spine, 2 squames, 1 rudimentary lobe, 1 squame, 1 spine, 2 squames, 1 rudimentary squame, 1 rudimentary lobe, 1 squame, 1 spine, 1 squame, beyond which a series of modified cuspid lobes on margins of second and third abdominal segments. Marginal semi-lunar pores prominent, 9 on each side, one median; first 2 on each side subtend 2 squames, remainder not as wide as 2, but wider than 1 squame. A submarginal series of dorsal oval pores more numerous and thickly placed near base of submarginal area of pygidium. Circumgenital glands in 4 groups of which the posterior pair contain each 5 openings and the anterior 6. This is quite constant. Anal orifice submarginal on dorsum.

Adult male not known.

Eggs (Pl. III, fig. 3) dark purple 0.28 millimeter long and 0.15 millimeter wide, placed transversely beneath scale.

Habitat: Philippines, Manila (Banks Coll.).

On upper surface of leaves of *Cocus nucifera* L.

Type: No. 10105 in Entomological Collection, BUREAU OF SCIENCE, Manila, P. I.

This species is most closely related to *Parlatoria proteus* Curt., but also resembles *P. pergandii* Comst., from which it differs in the color of the scale, *P. pergandii* Comst. being of a light yellow, transparent hue, while *P. greeni* n. sp. is slate color. The fourth lateral (first rudimentary) lobes are more developed and have dentate margins and a sharp terminal cusp. The color of the second pellicle is constant and characteristic.

This species is named in honor of my friend, Prof. E. Ernest Green, Government Entomologist of Ceylon, whose indefatigable labors in the study of the Coccidæ are known and appreciated in all parts of the world.

**Chionaspis candida** n. sp.

*Chionaspis* Sign., *Ann. Soc. Ent. Fr.* (1869), (4) 9, 442.

\_\_\_\_\_ Fernald, *Cat. Coc. World* (1903), 203. *Et al. in litt.*

Type: salicis.

Female puparium (Pl. IV, fig. 1) snow-white, 2.35–2.50 millimeters long, 1.15–1.23 millimeters wide. Considerably dilated posteriorly; narrow anteriorly, the sectionary area usually reaching middle of second pellicle, but sometimes to its anterior margin. Surface smooth, somewhat glabrous and showing only transverse lines of growth. Pellicles pale, fulvous, second slightly darker posteriorly. First pellicle, one-half the length and one-third the width of second, which it overlaps for one-half its own length. An almost imperceptible carina on second pellicle. Length of second pellicle 0.77 millimeter.

Male puparium (Pl. IV, fig. 2) snow-white, 0.85–0.90 millimeter long, 0.38 millimeter wide, with ill-defined median and lateral carinæ. Surface woolly. Pellicle one-third length of puparium and of a very pale-fulvous.

Adult female (Pl. IV, fig. 3) length 1.25 to 1.75 millimeters, width 0.65 to 0.80 millimeter; pale-yellow, pygidium with brownish tinge posteriorly. Form, elongate oval. Antennæ with basal knob, cuspid internally; apical joint stout, fleshy, quite similar in shape and size to larger pygidial squames, submarginal, on anterior part of head. Entire surface of body minutely palpillate. Dorsum, posterior to a transverse line through apex of rostrum, marked by 2 submedian subparallel, linear stomata diverging posteriorly. Abdominal segments acutely lobed (Pl. IV, Fig. 3). Anterior spiracles having well-defined parastigmatic glands and removed laterally from apex of rostrum a distance equal to width of latter at base. Posterior spiracles slightly smaller than anterior and placed a

little before middle of body, about equidistant from each other and from the margin. Pygidium (Pl. IV, fig. 4) with circumgenital area marked by a horse-shoe of snow-white secretion, open posteriorly. Median lobes projecting one-third their length from an obtuse posterior notch; their interior margins minutely dentate (usually 5 dentations). External cusp rounded; laterad of this a small tooth; a pair of spines between median lobes. Exterior to median lobe a spinose squame, a marginal pore, 2 lateral lobes, the larger dentate laterally, and their margins rounded. Exterior to lateral lobes, a squame, 2 marginal pores; on dentations of margin, a squame, 2 marginal pores, a squame, 2 marginal pores, a squame, a marginal pore and 6 squames, latter on third abdominal segment. Segmental areas quite well defined by plications and series of dorsal pores, the latter forming on each side 4 distinct series as follows: On second abdominal segment 8 submarginal; on third, 4 submedian and 8 submarginal; on fourth, 3 submedian and 5 submarginal; on pygidium, 2 submedian, 5 submarginal and 1 exterior to anterior group of circumgenital glands. Cylindrical ducts short and stout. Circumgenital glands arranged in 5 groups, the median with 8, the anterior lateral with 14-19 and the posterior with 14-16 openings. Anal opening directly above genital—i. e., both lie in same vertical plane.

Adult male not known.

Eggs pale-yellow 0.30 millimeter long and 0.15 millimeter wide. Plainly visible through body wall of female.

Larvæ (Pl. IV, fig. 5) pale-yellow, 0.40 millimeter long upon emerging from egg.

Habitat: Philippines, Manila (Banks Coll.).

On upper surface of leaves of *Cocos nucifera* L.

Type No. 10102 in Entomological Collection, BUREAU OF SCIENCE, Manila, P. I.

**Lepidosaphes mcgregori** n. sp.

*Lepidosaphes* Shimer, *Tr. Am. Ent. Soc.* (Jan, 1868), 1, 373.

*Mytilaspis* Sign., *Ann. Soc. Ent. Fr.* (1868), (4) 9, 91; not described.

*Phaulomytilus* Leon., *Riv. Pat. Veg.* (1897), 6, 205, 206.

*Coccomytilus* Leon., *Riv. Pat. Veg.* (1897), 6, 205, 206.

*Trichomytilus* Leon., *Riv. Pat. Veg.* (1897), 6, 205, 206.

*Lepidosaphes* Fernald, *Cat. Coc. World* (1903), 304.

Type: *conchiformis* = *ulmi*.

Female puparium (Pl. V, fig. 1) 2.50-2.65 millimeters long, 0.60-0.75 millimeter wide; very long and narrow, with the sides gradually diverging posteriorly and well rounded dorsally; clear, red-brown, with lighter to whitish margins; transverse striæ separated into groups by more pronounced carinæ. First pellicle broadly oval, yellow-ochraceous, with broad, median carina and 2 waxy, anterior horn-like projections; second pellicle slightly darker, more elongate, narrowing abruptly and acutely posteriorly, hind margin and an anal patch light ochraceous, with a transverse discal carina and a decided spine on margin of second abdominal segment.

Male puparium (Pl. V, fig. 2) 1.45 millimeters long, 0.35 millimeter wide, narrow anteriorly and widening behind; posterior margin subcircular. Pale, yellow-brown anterior, waxy, horn-like projections lacking; posterior and lateral margins narrowly white; a transverse, pre-anal, thin portion of scale marking portion which may be elevated for escape of adult male.

Adult female (Pl. V, fig. 5) 0.90-0.95 millimeter long, 0.35 millimeter wide, of a light-yellow, almost white; the anterior extremity slightly narrower, widest part just anterior to pygidium. Antennæ halfway between front margin and base of rostrum and having each an axillary spine mediad, nearly equal to them

in length. Anterior spiracles opposite apex of rostrum and halfway to lateral margin, with a few stigmatic orifices anteriorly. Mentum subtriangular. Posterior spiracles conspicuous. Abdominal segments easily differentiated and strongly lobed at margins; first segment spineless, second with 3, third and fourth with 4 spines each. Thoracic cuticle not especially chitinous; irregularly papillate. Pygidium (Pl. VI, fig. 3) narrower than long, pale-ochraceous, slightly darker than abdominal margins. Anal orifice three times its own diameter, from anterior margin of pygidium, protected on each side by a longitudinal fold, the 2 converging posterior to anus and exteriorly to disc of pygidium in parallel lines. Circumgenital glands in 5 groups, the median with 4 orifices, the anterior lateral with 6 and the posterior with 5 to 6. The grouping is not well defined. Median lobes broad, their surfaces crenulate, rounded, and having a distinct tooth at each side; second pair of lobes double, their margins straight. A median, acute tubercle in mesal space, with a long spinous squame on either side; 2 squames between first and second double lobes; 2 beyond second double lobes, 2 groups of 2 each toward base of pygidium. Margin of pygidium beyond lobes thickened and minutely serrated, with 3 prominent teeth, in the first 2 of which are 2 oval, glandular orifices, in the basal of which, one. Another similar orifice between median and second lobes, making total of 6 for each side. Genital orifice one-third distance from median group of circumgenital glands to posterior margin. Numerous, circular, dorsal pores irregularly arranged, 2 being submedian posteriorly, 1 below each of second lobes and remainder near center of disk.

Adult male not known.

Eggs (Pl. V, fig. 3) 0.28 millimeter long, 0.11 millimeter wide, of a rather light purple, very regularly arranged in puparium (Pl. V, fig. 4).

Larva (Pl. VI, fig. 2) 0.29 millimeter long, 0.11 millimeter wide, slender, somewhat polygonal, bright-yellow, having a prominent spine on posterior, lateral margin of mesothorax. Antennæ slender, transversely striate, with few hairs, 2 stout ones at tip; a few spines on posterior and anterior extremities, 2 submedian caudal setæ one-third length of body. Tarsal knobbed hairs twice length of ungues.

Habitat: Philippines, Manila (Banks, Coll.).

On both surfaces of leaves of *Cocos nucifera* L.

Type: No. 10142 in Entomological Collection, BUREAU OF SCIENCE, Manila, P. I.

This species differs from *L. cocculi* Green in having no cephalic transverse fold, in the ventral scale being incomplete, in the color and disposition of the eggs, and in the form of the median lobes. In addition, the general appearance of the scale and the perceptible prolongation of the anterior, waxy, horn-like projections readily differentiate it as a separate species.

I take pleasure in naming this species for my friend Richard C. McGregor, a most diligent collector and an accurate observer of insect life in the Philippines.

**Lepidosaphes unicolor** n. sp.

Female puparium (Pl. VII, fig. 1) 1.80–1.90 millimeters long, 0.50 millimeter wide, of about the same general shape and size as *L. mcgregori* n. sp., except that fore end of first pellicle is more acute and marginal flattening is hardly perceptible; of a dark-red or dark-cherry-brown including both pellicles, except a lighter patch on sides and caudal end of second. Both pellicles with median carina, puparium transversely multicarinate (usually 7 carinæ), the carinæ sep-

arating transversely-striate, paler areas. At posterior end there is a pair of subparallel, longitudinal elevations or carinae. This feature appears to be constant.

Male puparium not known.

Adult female (Pl. VII, fig. 3) 0.90 to 0.05 millimeter long, 0.35 millimeter wide, of a pale, transparent, cream-color, nearly white, narrow anteriorly, widening uniformly to third abdominal segment, then somewhat abruptly rounding to extremity. Front rounded; latero-frontal angles of head produced laterally into spinose, concentrically papilliate knobs. (Pl. VII, fig. 4.) Antennae nearer front than base of rostrum; secondary spine as long as primary and usually strongly curved. First spiracles opposite mentum, nearer margin. Abdominal segments strongly produced laterally, then posteriorly. The second, third, and fourth with 3 to 4 stout spines and the second with a lateral cusp. Pygidium pale-ochraceous. Circumgenital glands hardly separated into groups, but consisting of an anteriorly curving series of 24 orifices, the median 4 of which are slightly separate from the laterals. Anal orifice a little more than its own diameter from base of pygidium; genital one-third the distance from the median group of glands to caudal margin. Median lobes as in *L. mcgregori* n. sp. Second double lobes with margins more rounding. Squames pseudo-fimbriate, the single fimbriation indicated on each by mere acute tubercle. (Pl. VII, fig. 6.) A median acute tubercle is present between mesal squames. Marginal orifices, on each side, with cylindrical spinnerets long and narrow; neither as large as in *L. mcgregori* n. sp. On dorsal area of pygidium are irregularly placed oval discal pores which are quite prominent in all specimens.

Adult male not known.

Eggs (Pl. VII, fig. 5) snow-white, 0.215 millimeter long, 0.10 millimeter wide, somewhat conical in form and laid in regular rows beneath puparium.

Larvæ (Pl. VII, fig. 7) pale-yellow, 0.23 millimeter long, 0.11 millimeter wide. Rather stout oval; front with 4 curved setae, mentum circular, antennae moderately stout, setose. Apices of tibiae larger than bases; caudal margin with 6 spines on each side.

Habitat: Philippines, Manila (Banks, Coll.).

On upper surfaces of leaves of *Cocos nucifera* L.

Type: No. 10171 in Entomological Collection, BUREAU OF SCIENCE, Manila, P. I.

This scale is quite distinct in appearance from *L. mcgregori* n. sp. Its color is uniform and the transverse carinae are fewer and less prominent on the puparium. The 4 irregularly placed discal pores of pygidium are not present in *L. mcgregori* n. sp. The great length and shape of the lateral abdominal margins and the shape of the squames serve to differentiate this as a new species.

**Paralecanium cocophyllæ** n. sp.

s. g. *Paralecanium* Ckll. & Parr., *The Industrialist* (1899) 277.

————— Ckll., *Can. Ent.* (1901) **33**, 57.

g. ————— Ckll., *Ann., Mag. Nat. Hist.* (1902) (7) **9**, 455.

————— Fernald, *Cat. Coc. World* (1903) 199.

Type: frenchii.

Adult female (Pl. VIII, fig. 1) 4-5 millimeters long, 3.5-4 millimeters wide; of a broad oval, almost circular and very slightly narrower anteriorly; margin with shallow, obtuse notches at stigmatic and anal clefts. Of a pale, transparent yellow; a distinct marginal area which is applied to leaf and which has its interior border marked by a thin, golden line. An orange-yellow patch on each

side of posterior area marking position of ventral egg cavities. These cavities lined with an orange-colored, viscid substance which soon dries upon exposure. A submarginal translucent area and a similar median one through which movements of internal organs are visible. An irregular, broken line of dark-brown spots, internally, shows through dorsal wall and probably marks lower part of alimentary canal. Dorsal surface minutely punctuate, and covered with a very thin, waxy substance in addition to a well-defined, longitudinally curved series of triplicate, polygonal, waxy laminae, the smaller of each of which is uppermost. These laminae are arranged as follows: A median series of 6 (sometimes the posterior is divided to form a seventh), a submedian of 9, a submarginal of 13 to 16 and a marginal of 28 to 30, on each side. (Pl. VIII, fig. 1.) The laminae mark the insect's stages of growth. (Pl. X, fig. 4.) Regularly arranged suboval pores over entire dorsum (Pl. VIII, fig. 2), but on each side of anal plate there is an outwardly and anteriorly curving series of 4 groups of pores. (Pl. VIII, fig. 7.) Marginal area with reniform, radiating cells arranged like scales on a fish. Anal opercular scales (Pl. VIII, fig. 5) triangular, pointed; the free edge being about equal to or slightly longer than base. Stigmatic clefts circularly incised at margin and invariably with 3 long, stout, blunt, curved spines (Pl. X, fig. 2), these spines not attaining outer margin, being removed their own length therefrom. Margin with series of flabelliform scales slightly overlapping (Pl. VIII, fig. 4), which are wider in proportion to their length than those of *P. (Lecanium) expansum* Green. Between the bases of flabellae, the margin is minutely dentate, the number of dentations being nonuniform. Eyes, red-brown, shining, placed two-thirds distance from rostrum to margin. Antennae (Pl. VIII, fig. 3) indistinctly 3 jointed, placed nearly in a line with and between rostrum and eyes at 3 times their own length from latter. Legs wanting. Genital orifice (Pl. VIII, figs. 5 and 6) obovate, anterior to anal aperculum at a distance equal to length of latter; containing an interior series of small and an exterior of large glands or pores. Exterior to orifice on ventrum minute spinnerets in 4 ill-defined groups on each side.

Male puparium (Pl. IX, fig. 2) 2.27 millimeters long, 1.20 millimeters wide, elongate-oval, silicious or waxy in structure, more convex than female and consisting of 17 plates, the posterior median being double the length of the anterior, thus differing from that of *P. expansum* Green in which the posterior median plate is divided, forming 2, or a total of 18. Upon each plate a series of widely separated waxy laminae, indicating larval covering. (Pl. X, fig. 4.)

Adult male (Pl. IX, fig. 1), length, including genitalia, 1.55 millimeters; length of wing 1.18 millimeters, of a uniform, pale yellowish-ocher, apodema darker-ocher. Eyes bright crimson. Antennae somewhat thickly and evenly setose from base to apex and with 3 knobbed hairs on last segment. Nervures of wings slightly darker than membrane. Legs as setose as antennae; tarsal claw acutely conical.

Eggs (Pl. XI, fig. 2) pale-yellow, 0.38 millimeter long.

Larvae (Pl. XI, fig. 1) of same color as eggs, 0.48 millimeter long, 0.26 millimeter wide, the caudal setae one-seventh length of body. Eyes brown-red, marginal. Anal cleft strong and deep (Pl. X, fig. 1.)

Habitat: Philippines, Manila (Banks, Coll.).

On under sides of leaves of *Cocos nucifera* L. in fair abundance.

Type: No. 10141 in Entomological Collection, BUREAU OF SCIENCE, Manila, P. I.

This species differs from *P. expansum* Green chiefly in the color, the shape of the flabellae, and the number of spines in stigmatic cleft, in the female, in the number of plates in the male puparium and the color of the apodema of the male.



## ILLUSTRATIONS.

[All figures are highly magnified; exact size is indicated in descriptions.]

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### PLATE I.

- FIG. 1. *Chrysomphalus propositus* Banks, adult male.  
2. Female puparium.  
3. Male puparium.

### PLATE II.

- FIG. 1. *Chrysomphalus propositus* Banks, adult female.  
2. First and second pellicles.  
3. Pygidium of female.  
4. Lateral spine of female.  
5. Egg.

### PLATE III.

- FIG. 1. *Parlatoria greeni* Banks, female puparium.  
2. Male puparium.  
2 A. Lateral view showing angle at which pellicle is inclined.  
3. Egg.  
4. Adult female.  
4 A. Lateral view.  
5. Lobe and squame of pygidium.  
6. Pygidium of female.

### PLATE IV.

- FIG. 1. *Chionaspis candida* Banks, female puparium.  
2. Male puparium.  
3. Adult female.  
4. Pygidium of female.  
5. Larva immediately after hatching.

### PLATE V.

- FIG. 1. *Lepidosaphes mcgregori* Banks, female puparium.  
2. Male puparium.  
3. Egg.  
4. Under surface of female puparium showing adult, eggs and eggshells;  
latter toward posterior extremity and closely compacted.  
5. Adult female.

### PLATE VI.

- FIG. 1. *Lepidosaphes mcgregori* Banks, second pellicle.  
2. Larva immediately after hatching.  
3. Pygidium of female.

## PLATE VII.

- FIG. 1. *Lepidosaphes unicolor* Banks, female puparium.  
 2. First and second pellicle.  
 3. Adult female.  
 4. Frontal margin of female, showing antennæ and antero-lateral prominences or knobs.  
 5. Egg.  
 6. Pygidium of female.  
 7. Larva, immediately after hatching.

## PLATE VIII.

- FIG. 1. *Paralecanium cocophyllæ* Banks, adult female.  
 2. Magnified portion of derm, showing irregularly oval cells.  
 3. Antenna of female.  
 4. Marginal flabellæ.  
 5. Genital orifice and anal operculum.  
 6. Genital orifice, highly magnified.  
 7. Operculum of female showing curving series of pellucid glands extending toward margin.

## PLATE IX.

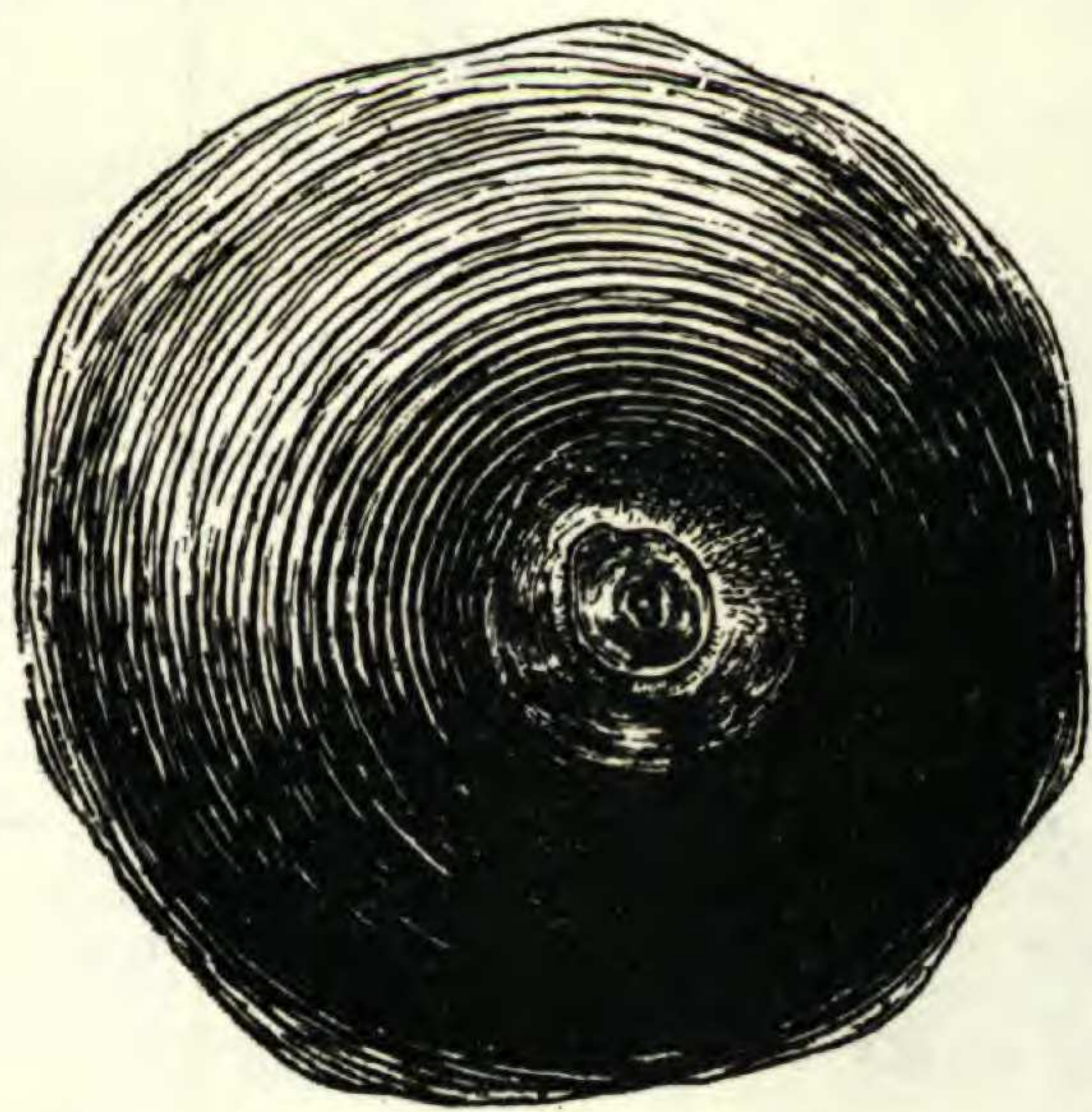
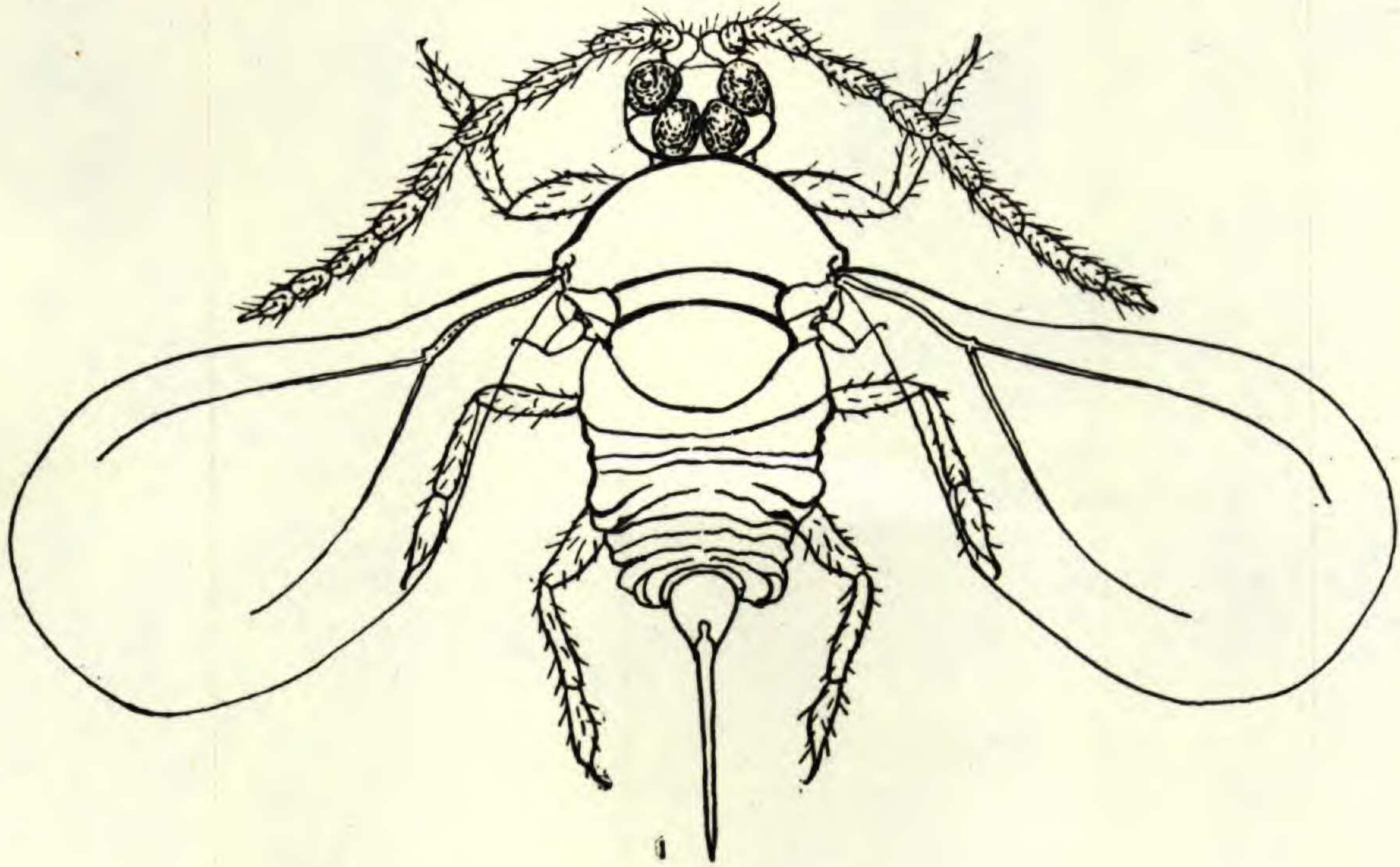
- FIG. 1. *Paralecanium cocophyllæ* Banks, adult male.  
 2. Male puparium showing superposed laminæ.  
 3. Male pupa.

## PLATE X.

- FIG. 1. *Paralecanium cocophyllæ* Banks, caudal extremity of larva.  
 2. Stigmatic cleft of female with spines and marginal flabellæ.  
 3. Mouthparts of female.  
 4. A single division or plate of male puparium showing dorsal laminæ of larva, separated by growth of the insect. The sides which were formerly proximate are numbered from 1-20.

## PLATE XI.

- FIG. 1. *Paralecanium cocophyllæ* Banks, larva immediately after hatching.  
 2. Egg.  
 3. Antenna of larva.  
 4. Anterior leg of larva.  
 5. Middle leg.  
 6. Posterior leg.



2



3

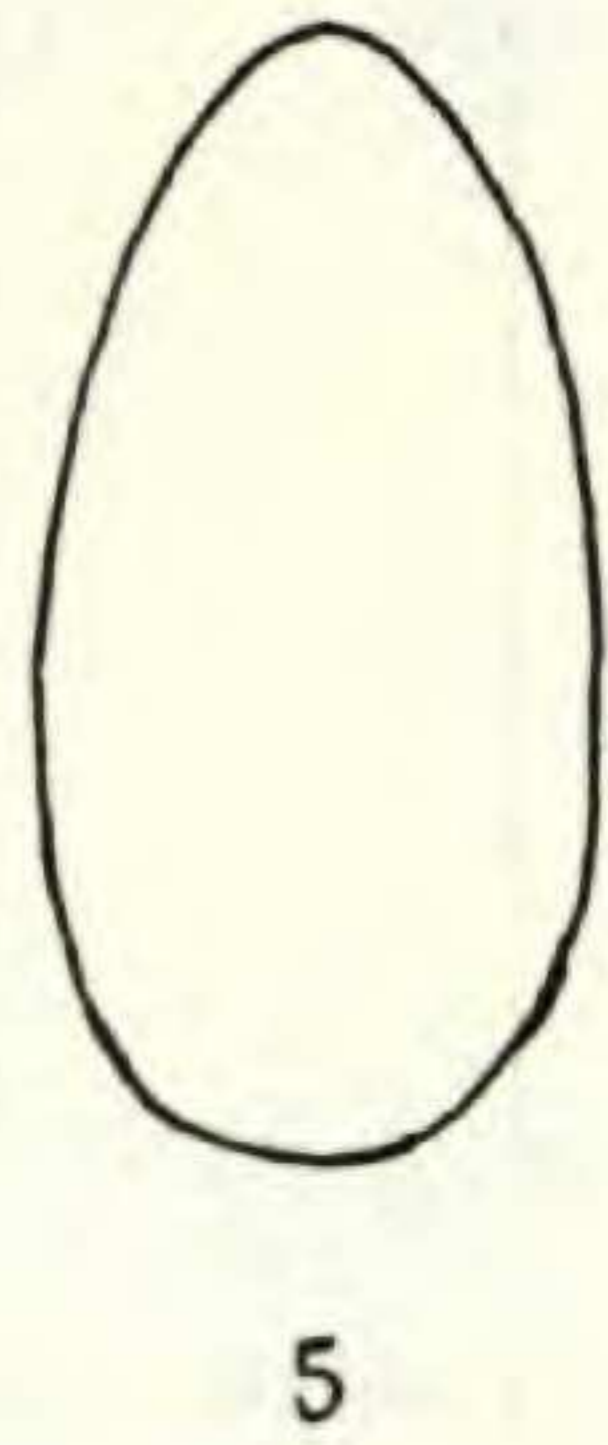
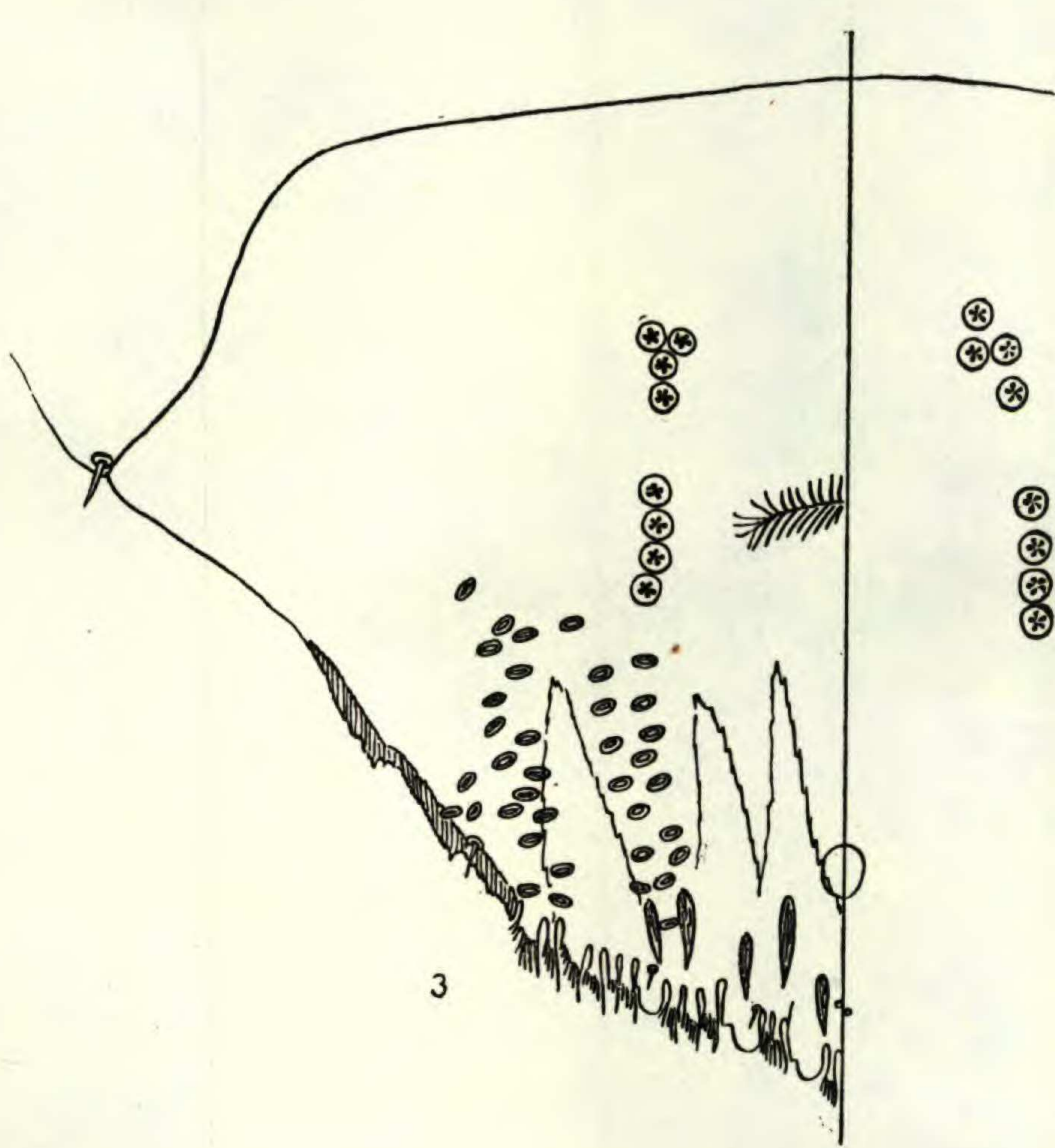
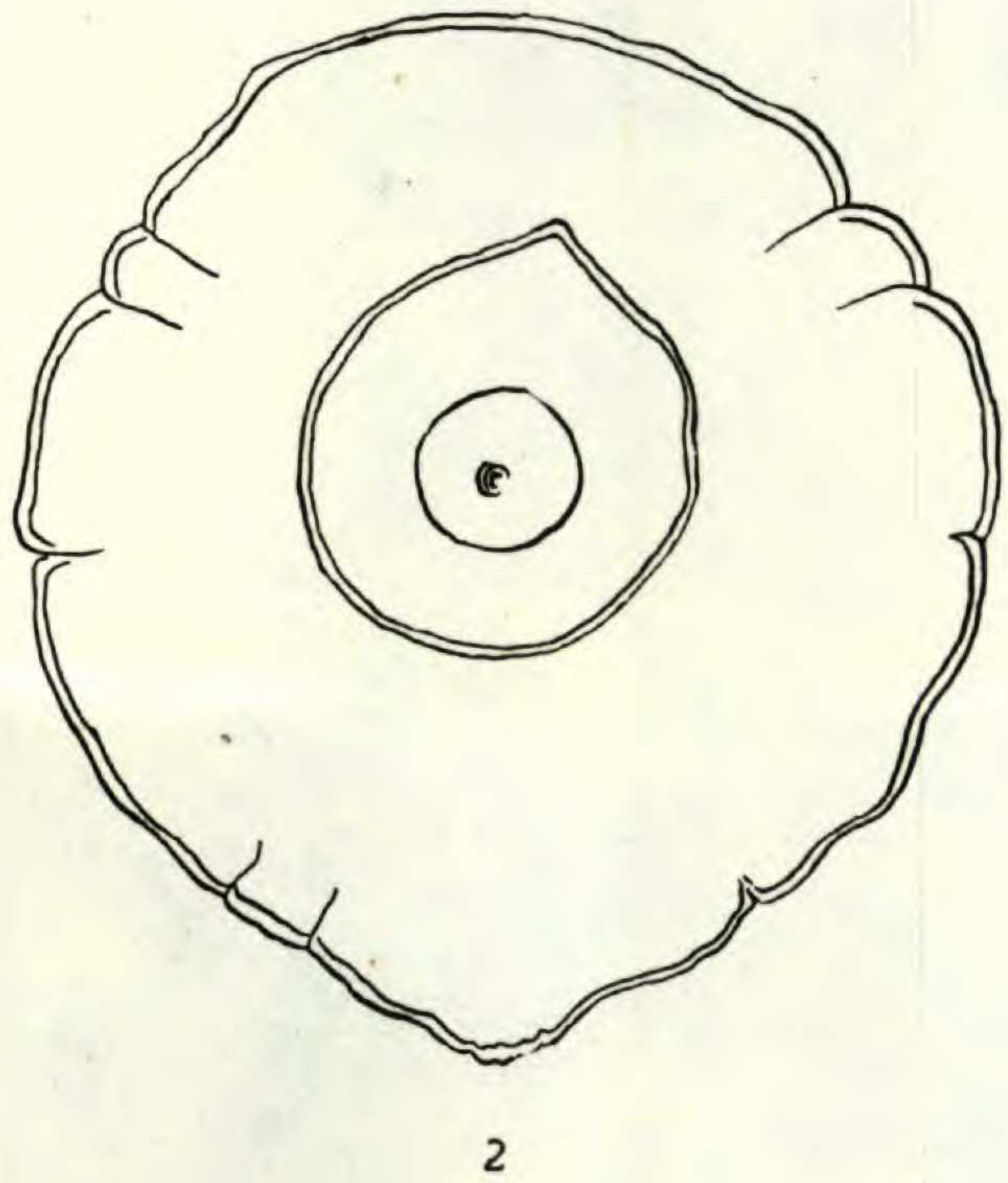
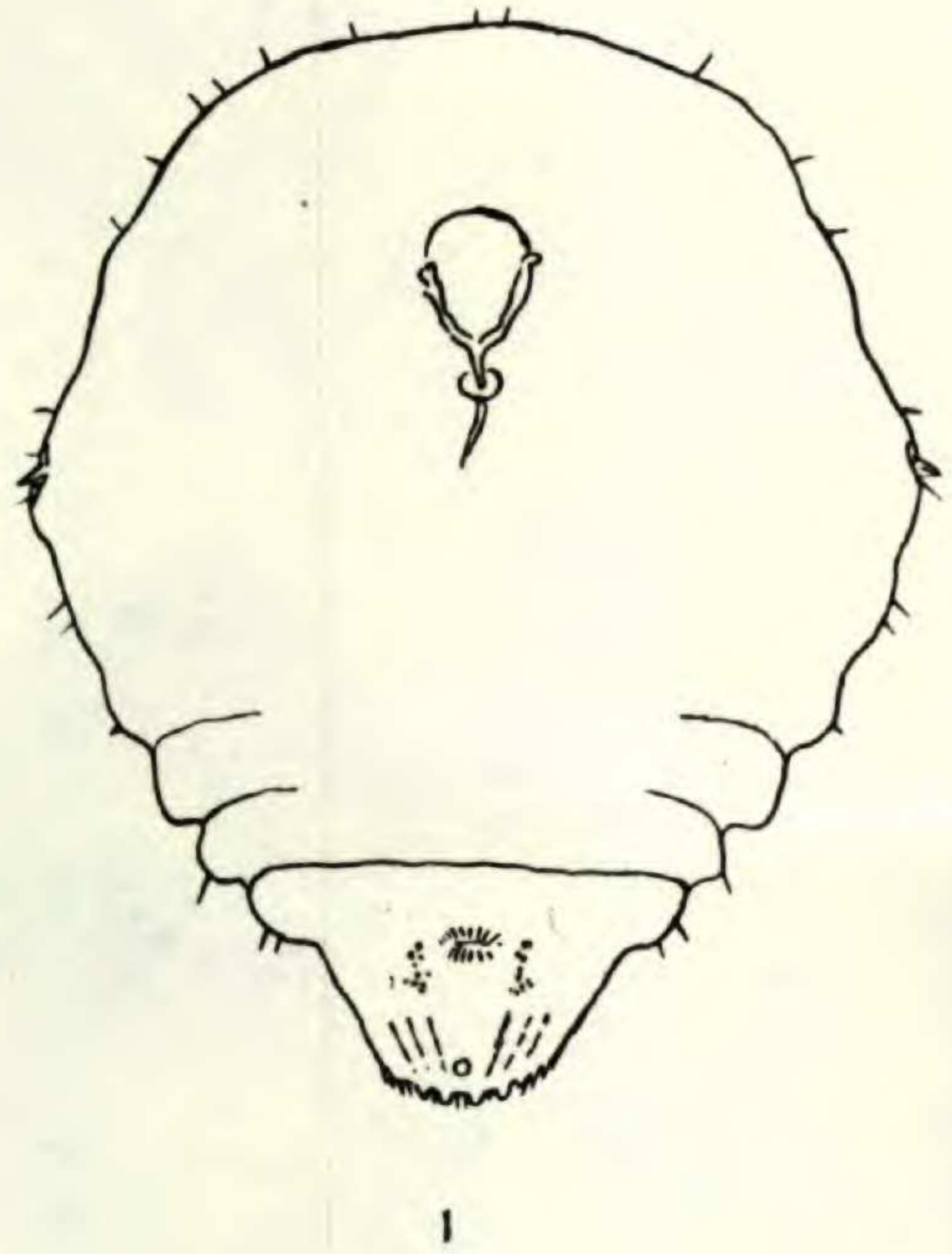


PLATE II.

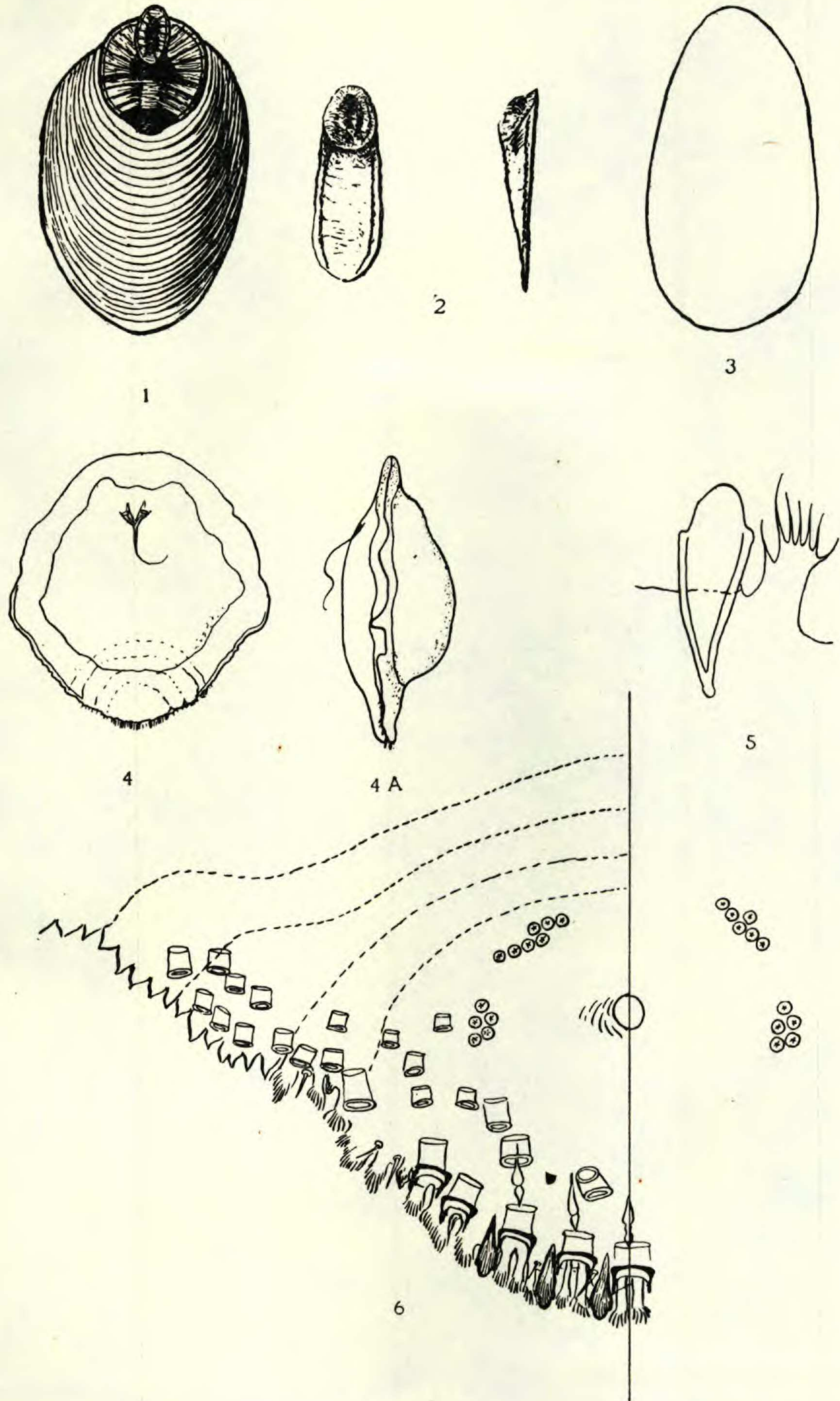
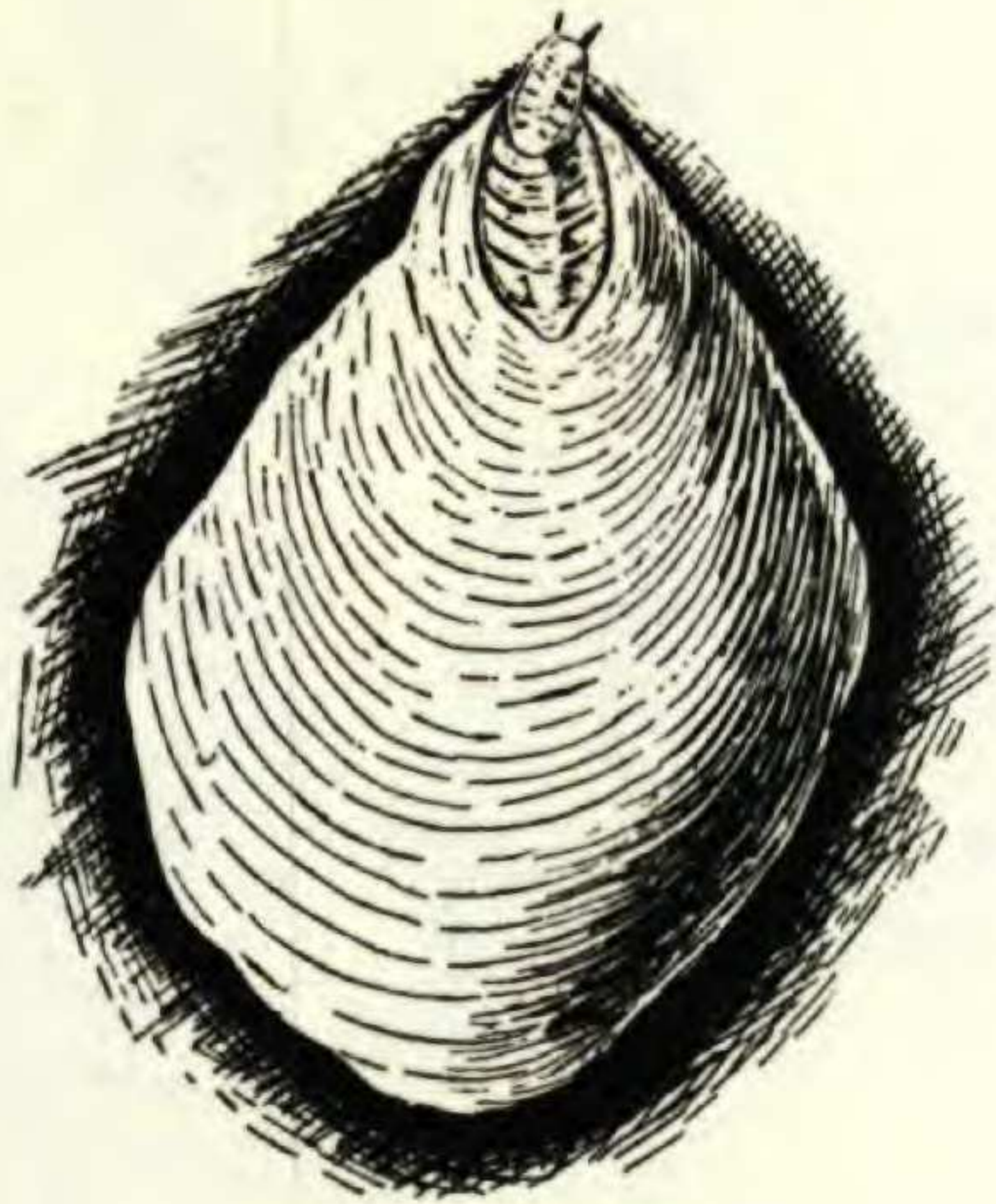


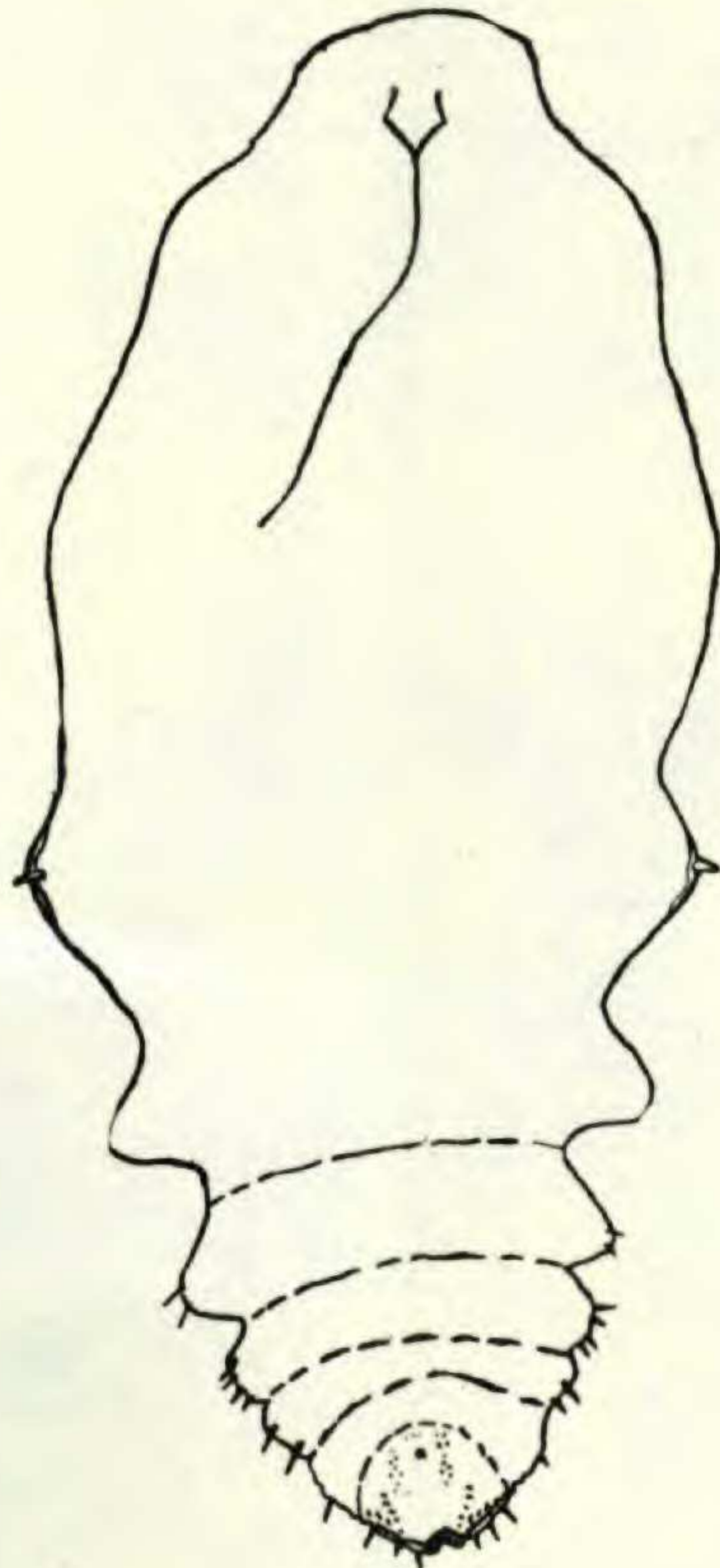
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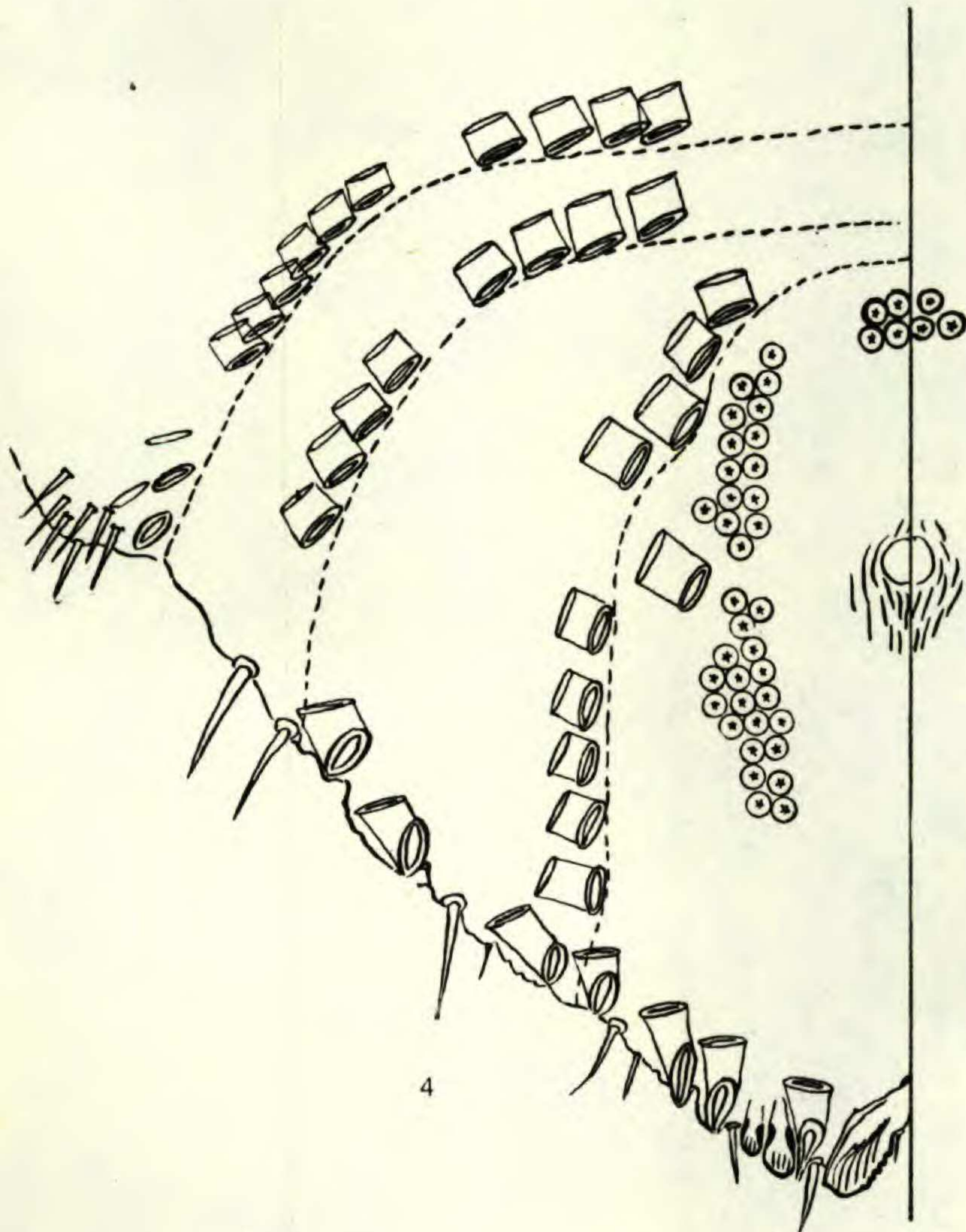
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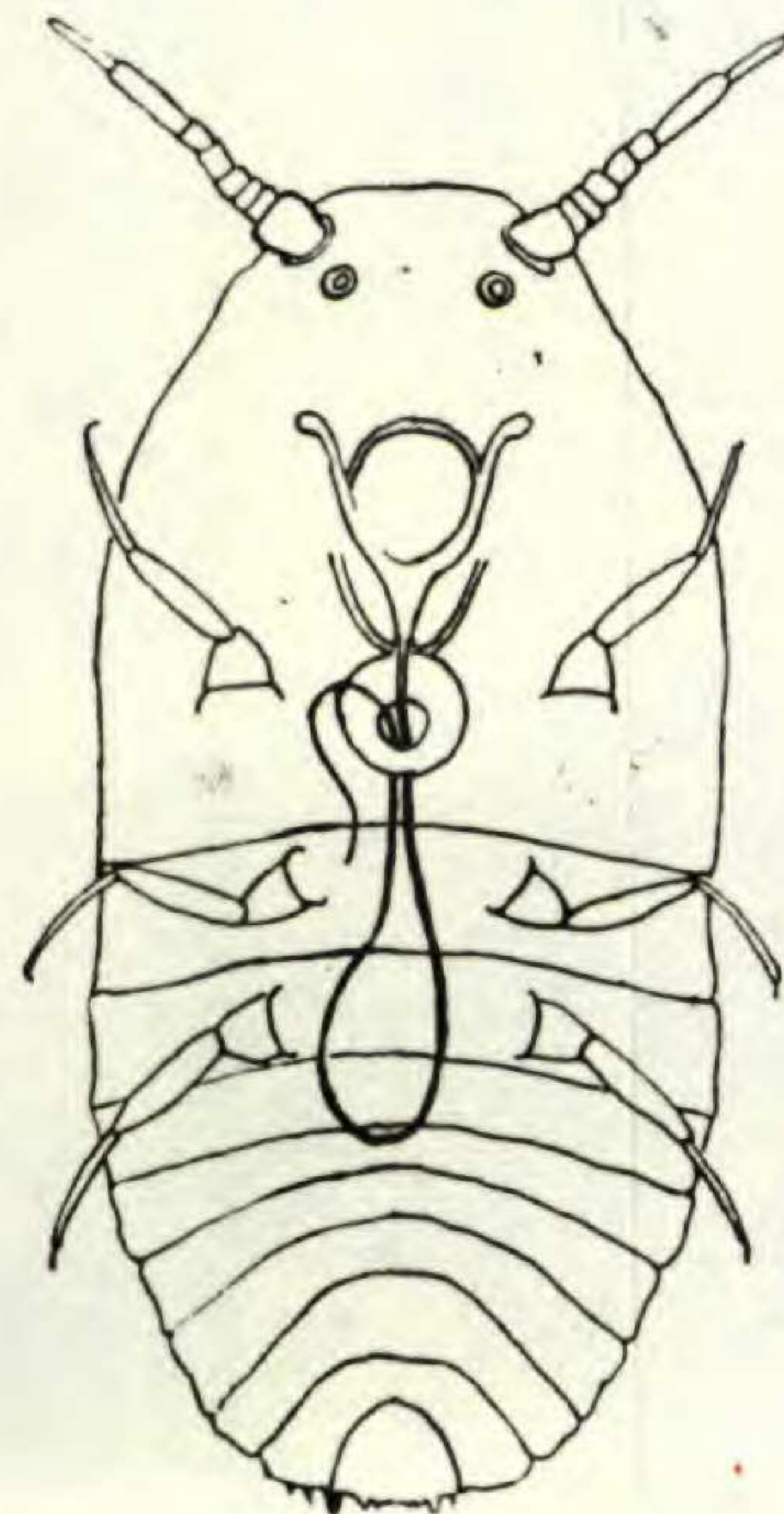
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3



4

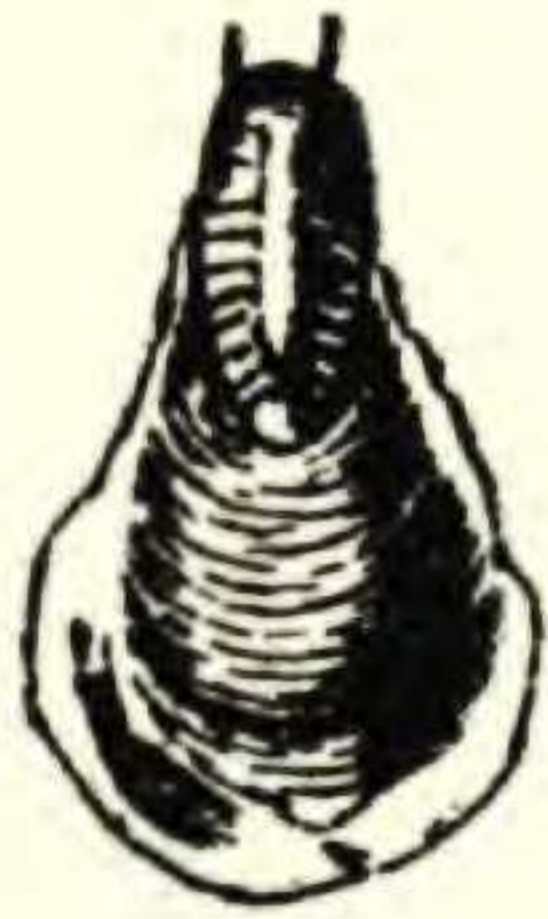


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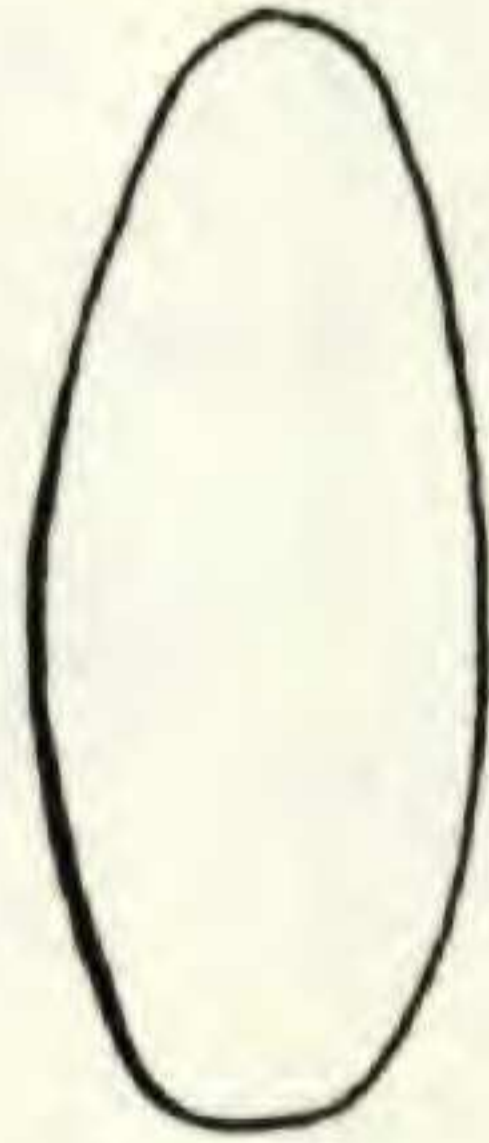
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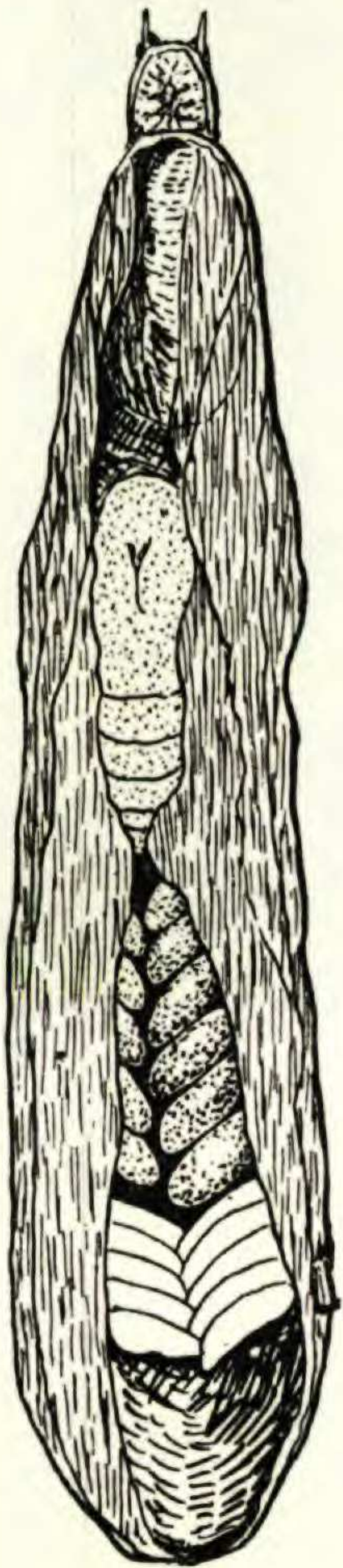
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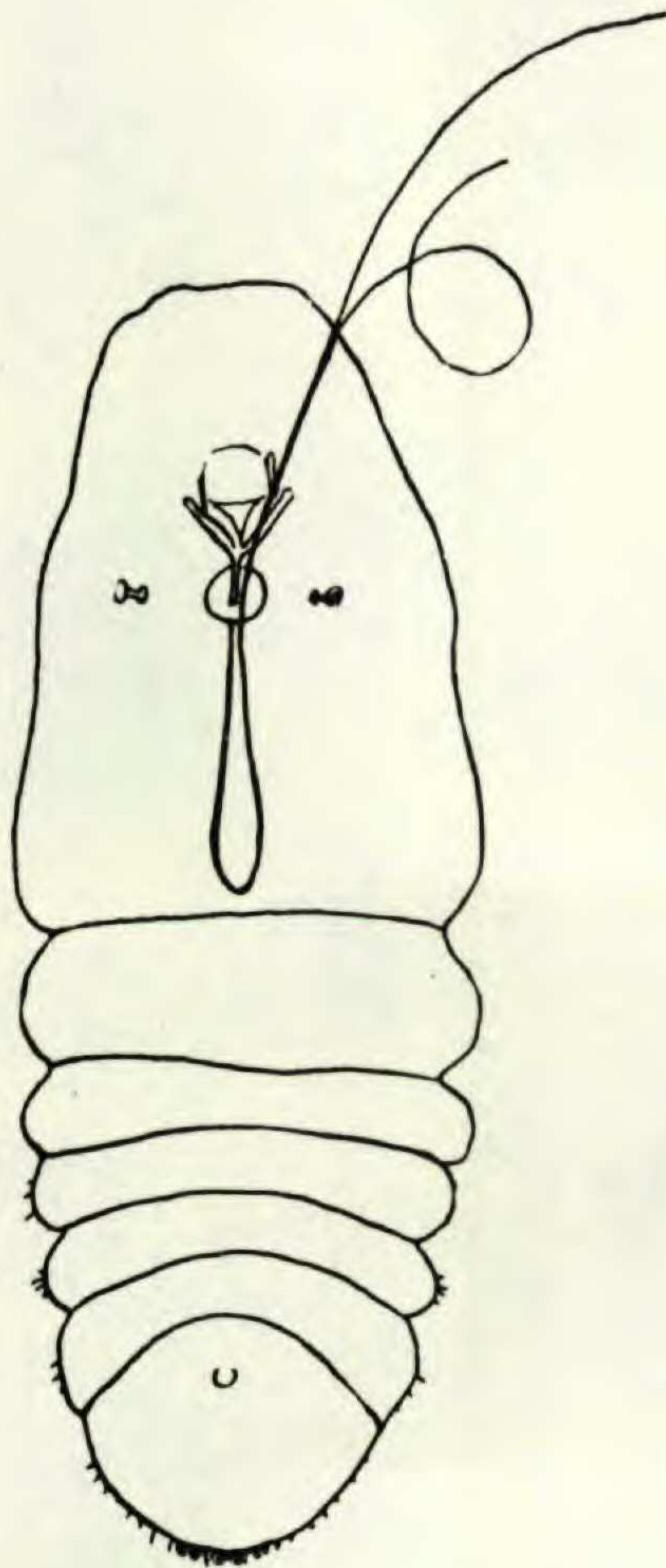
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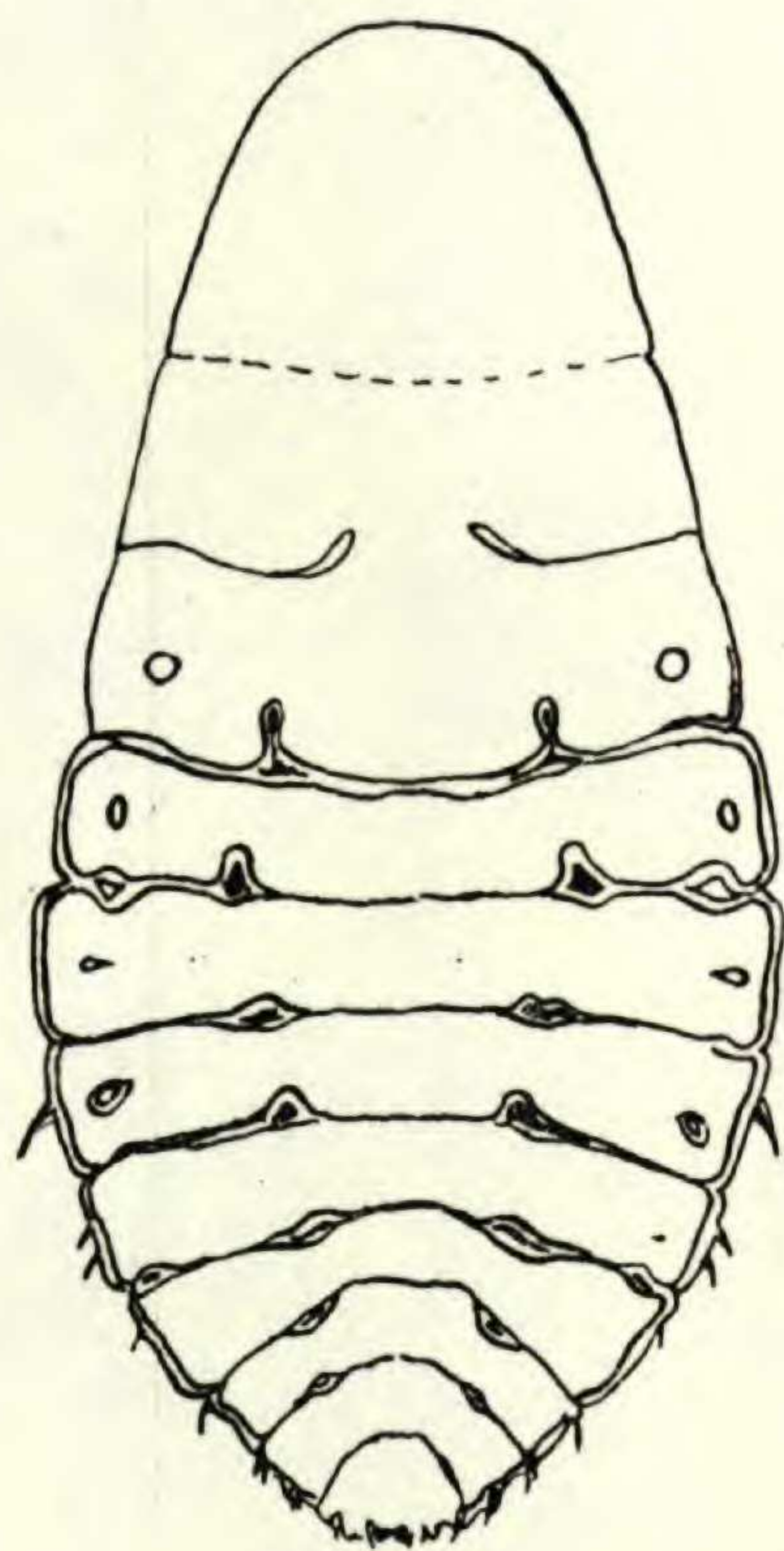
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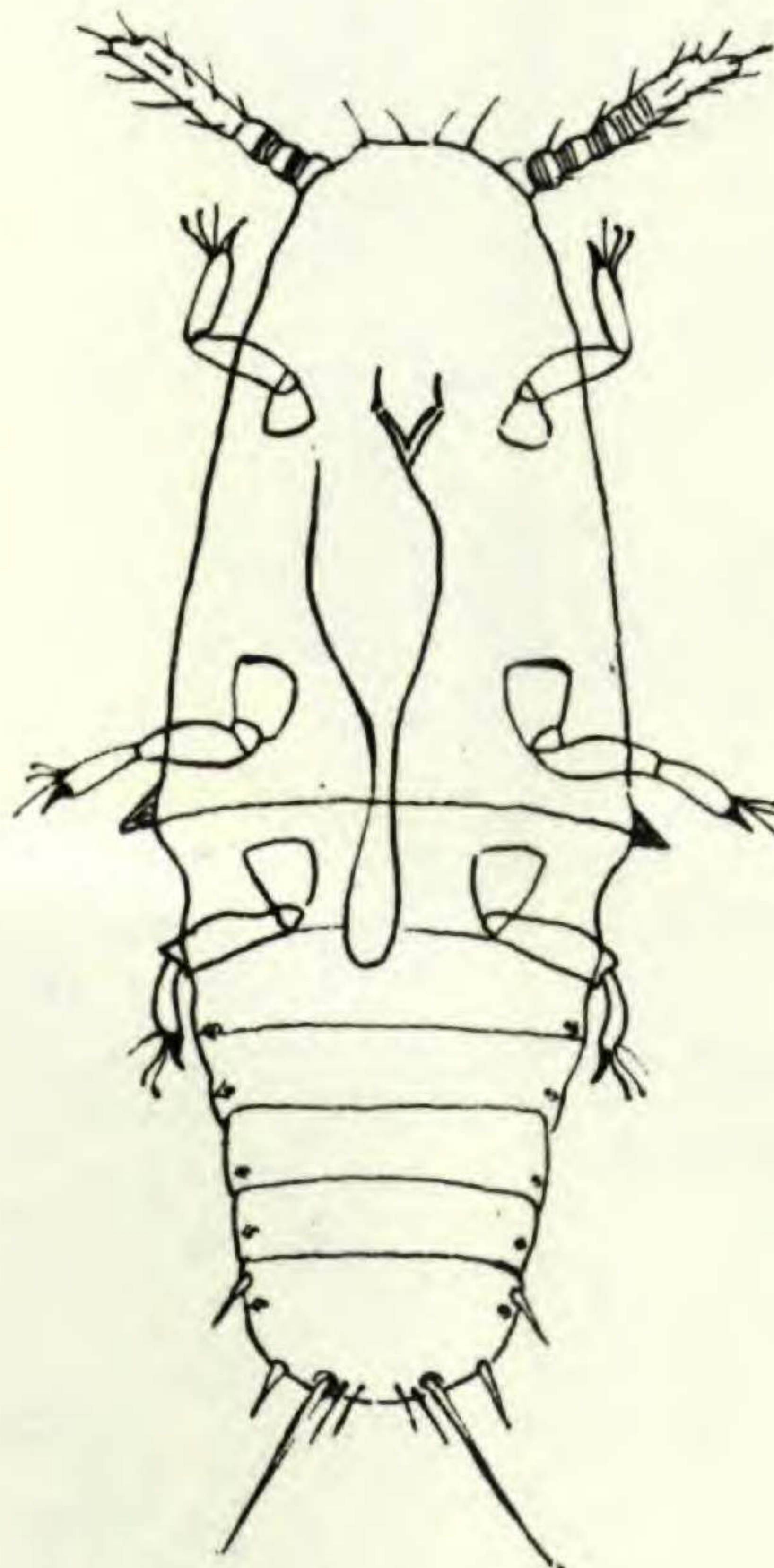
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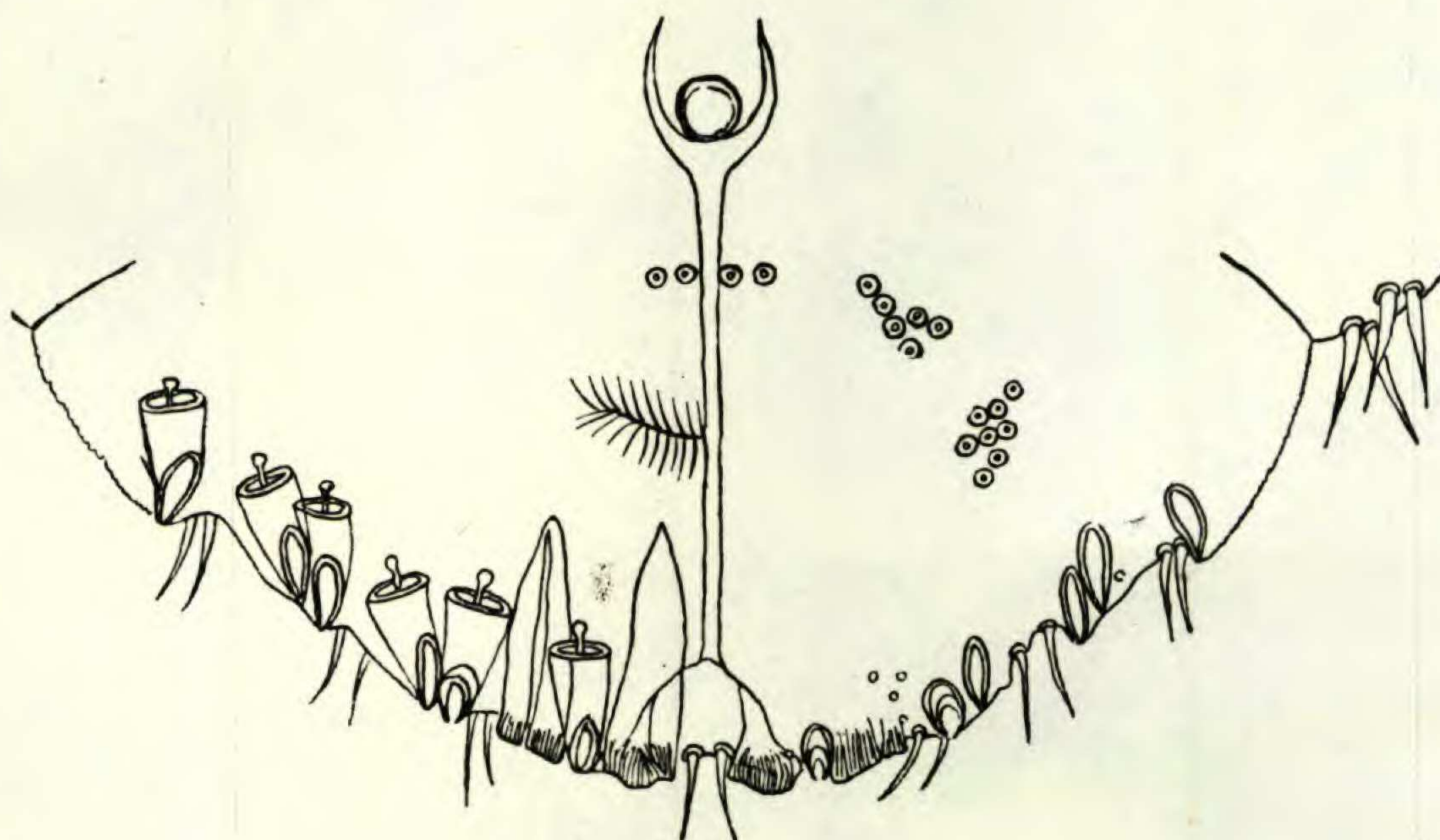
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1



2



3



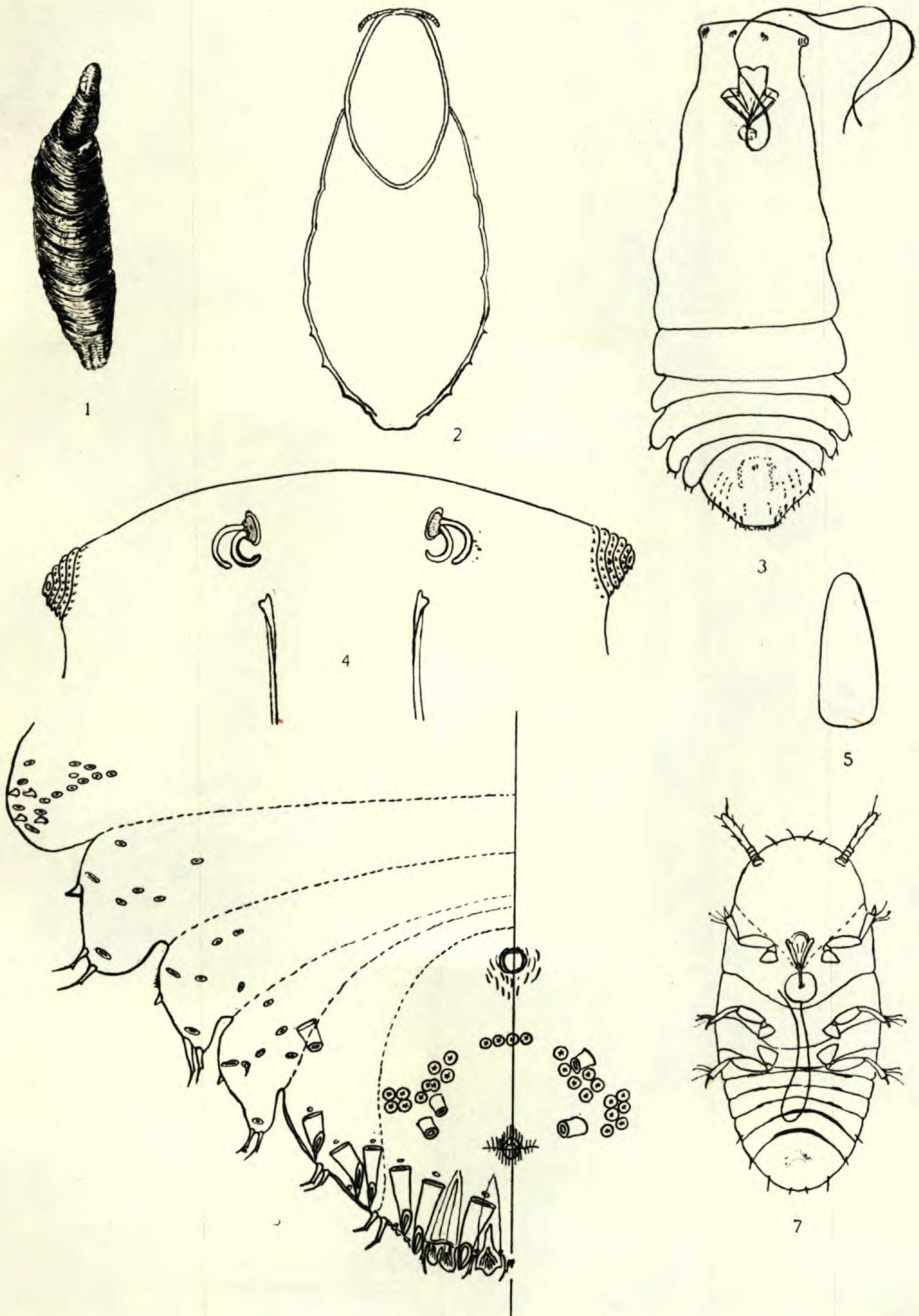
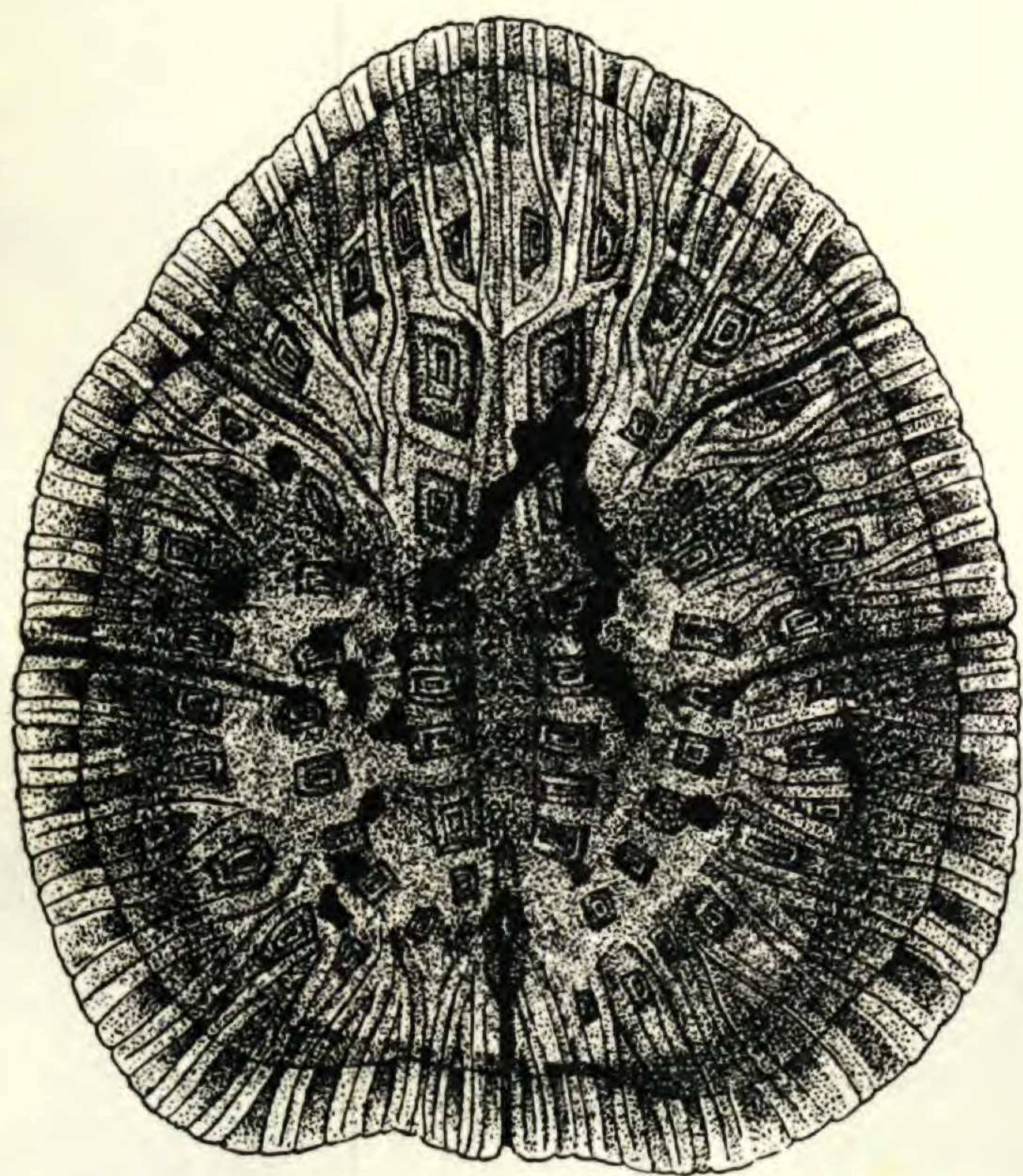
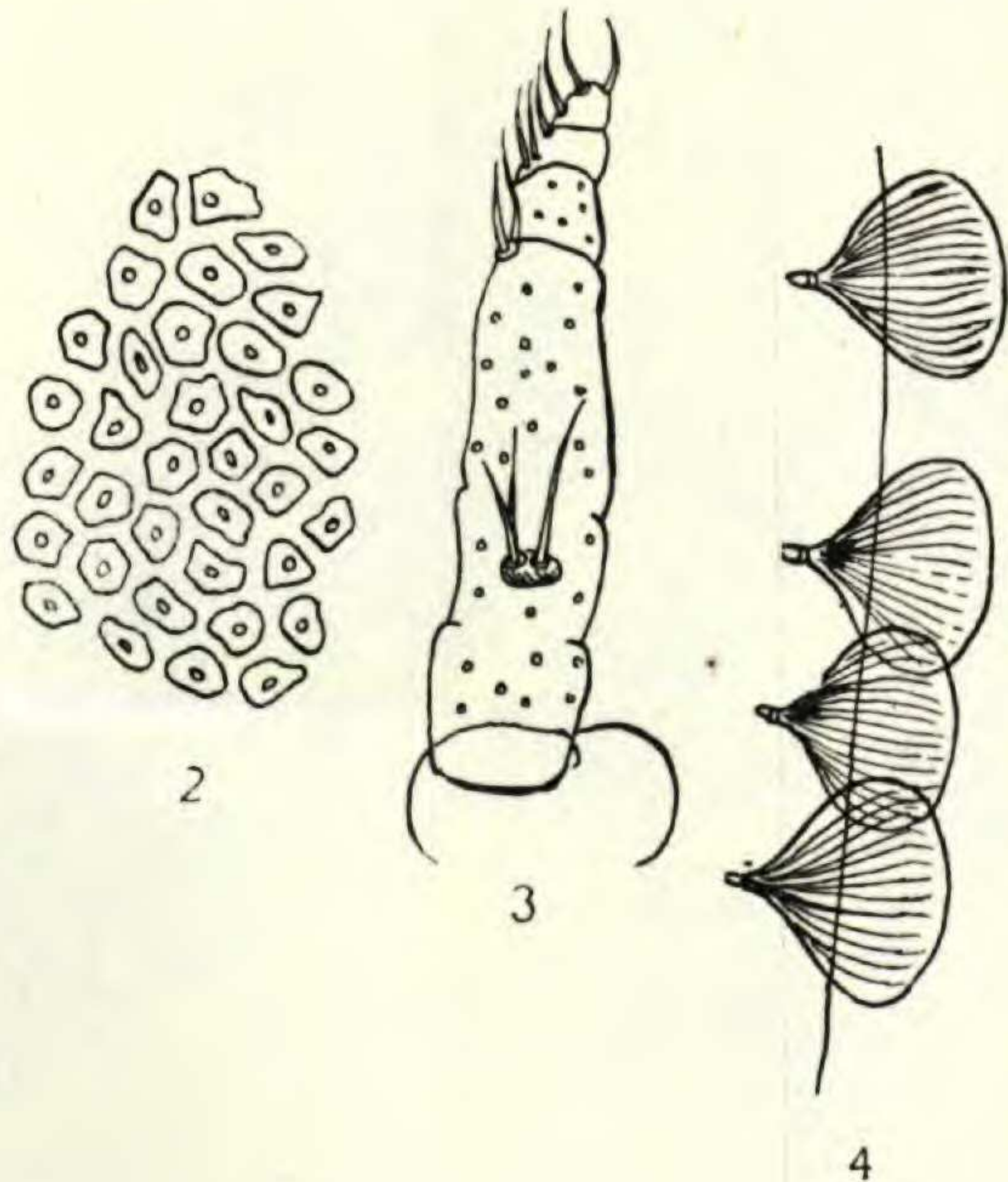


PLATE VII.



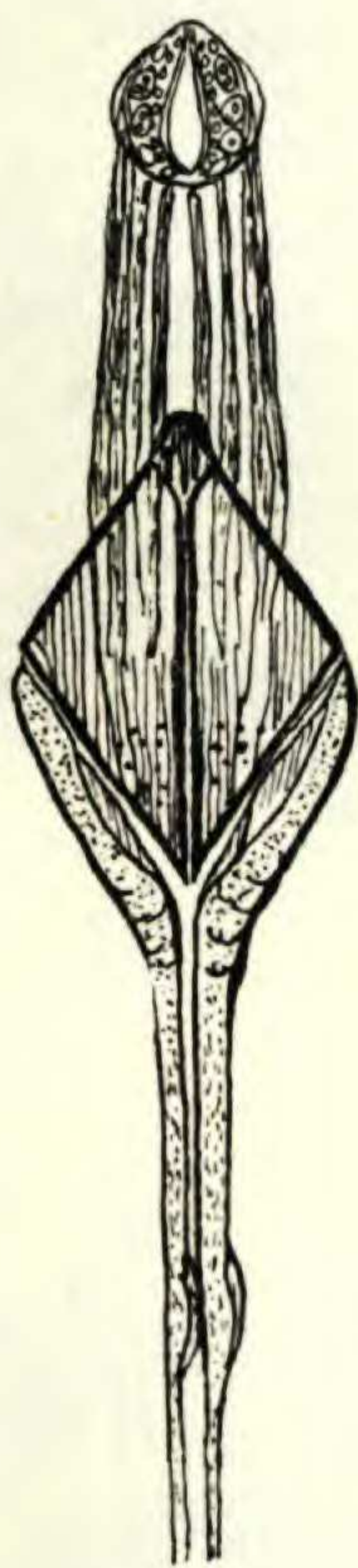
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2

3

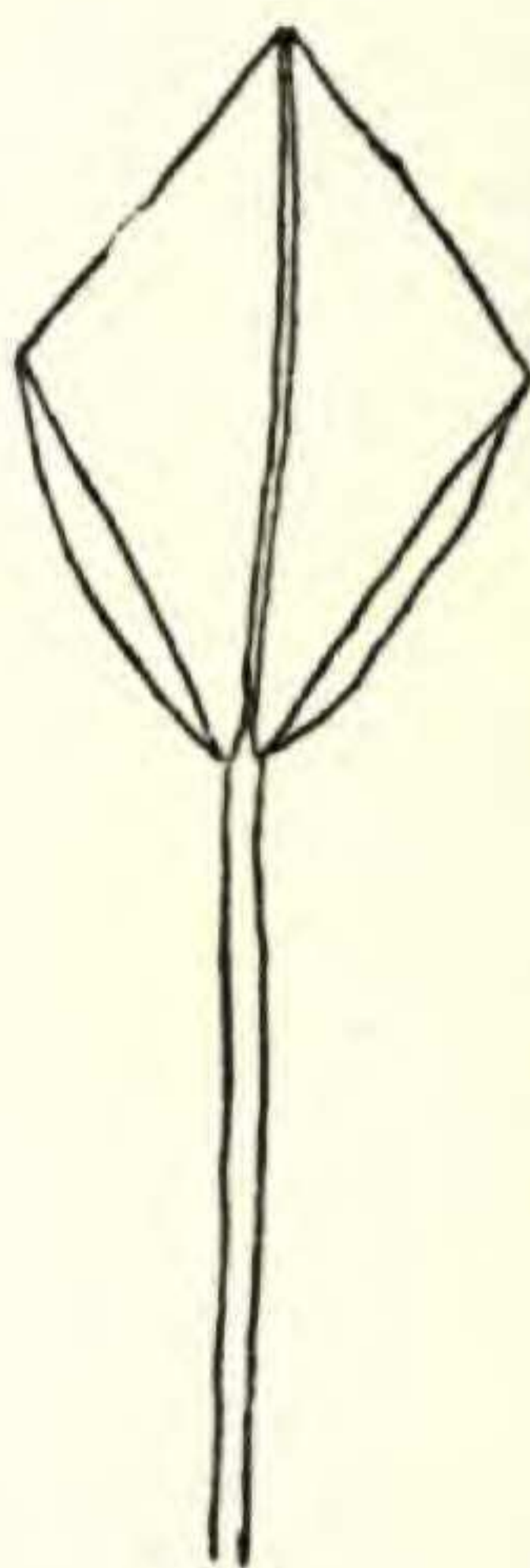
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5



6



7

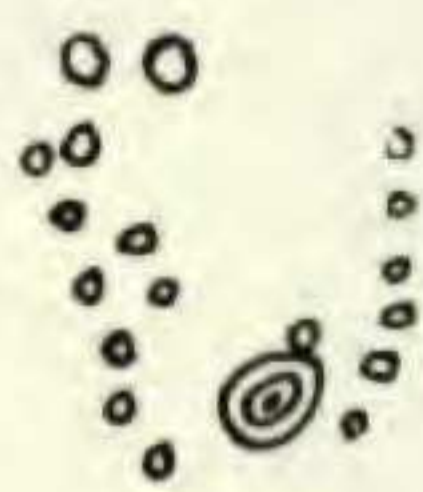
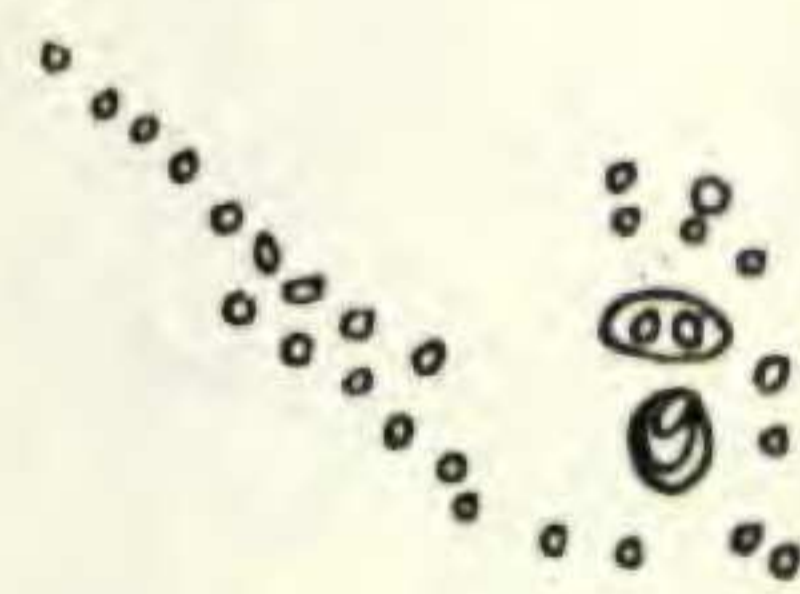
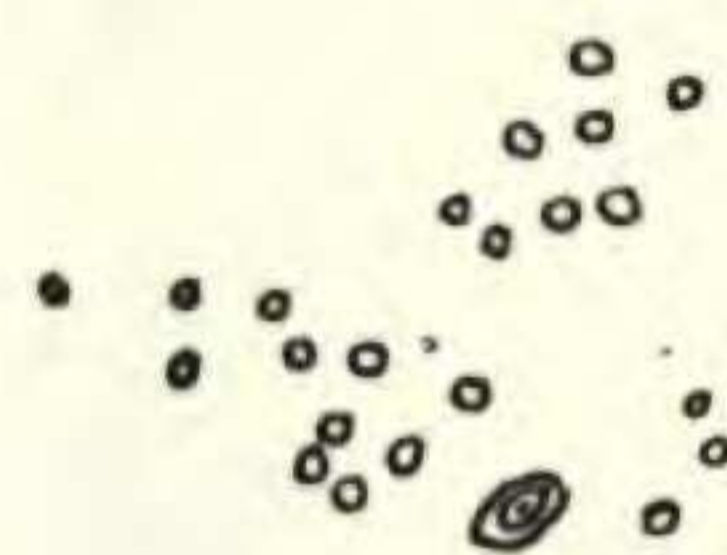
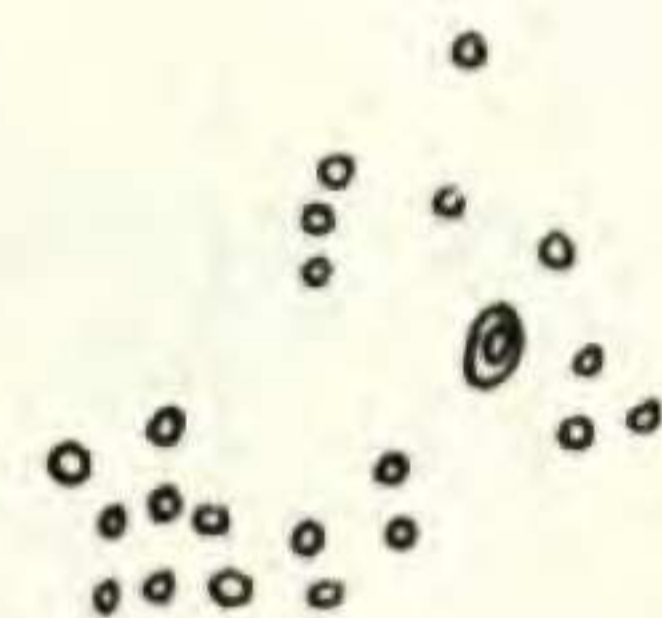
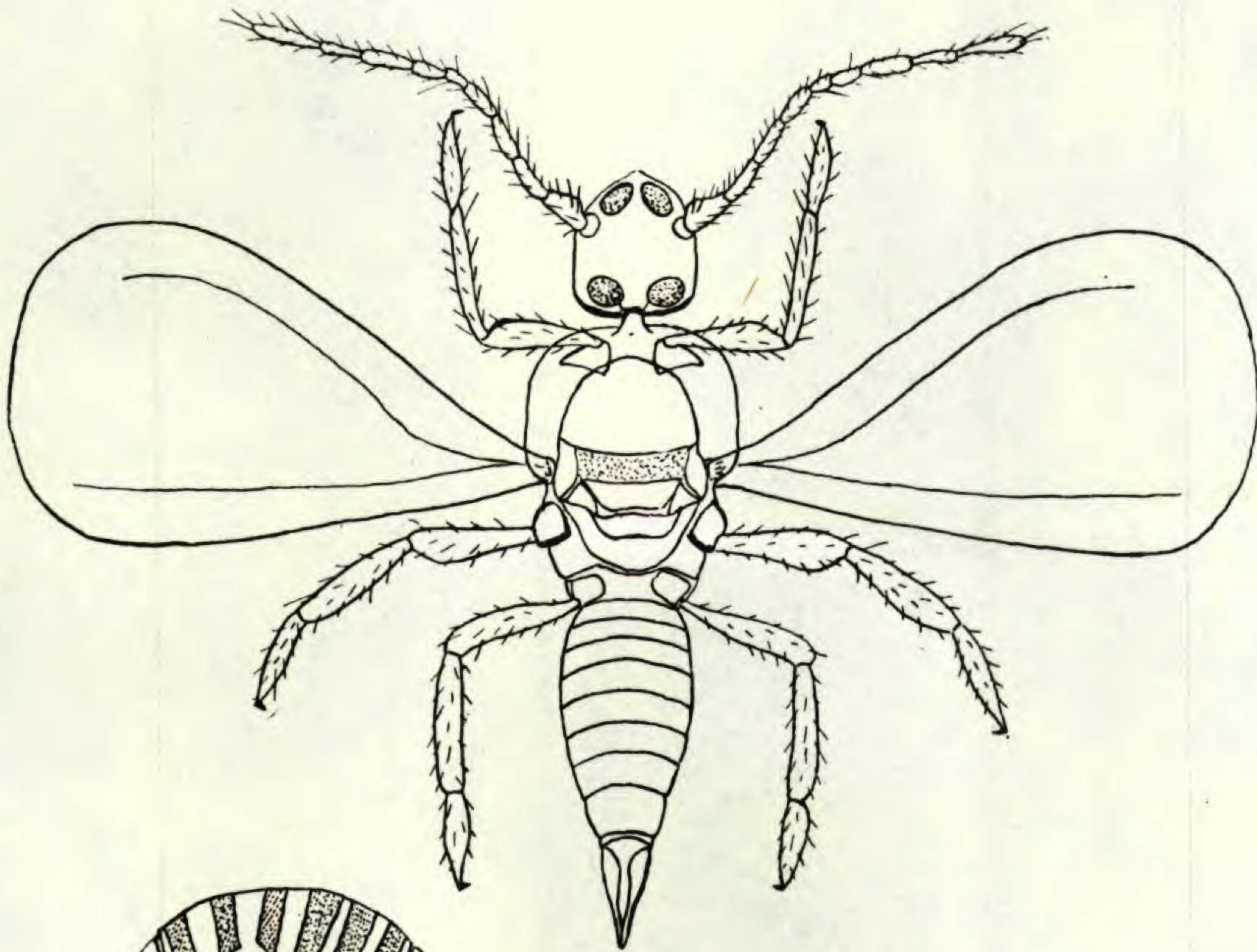
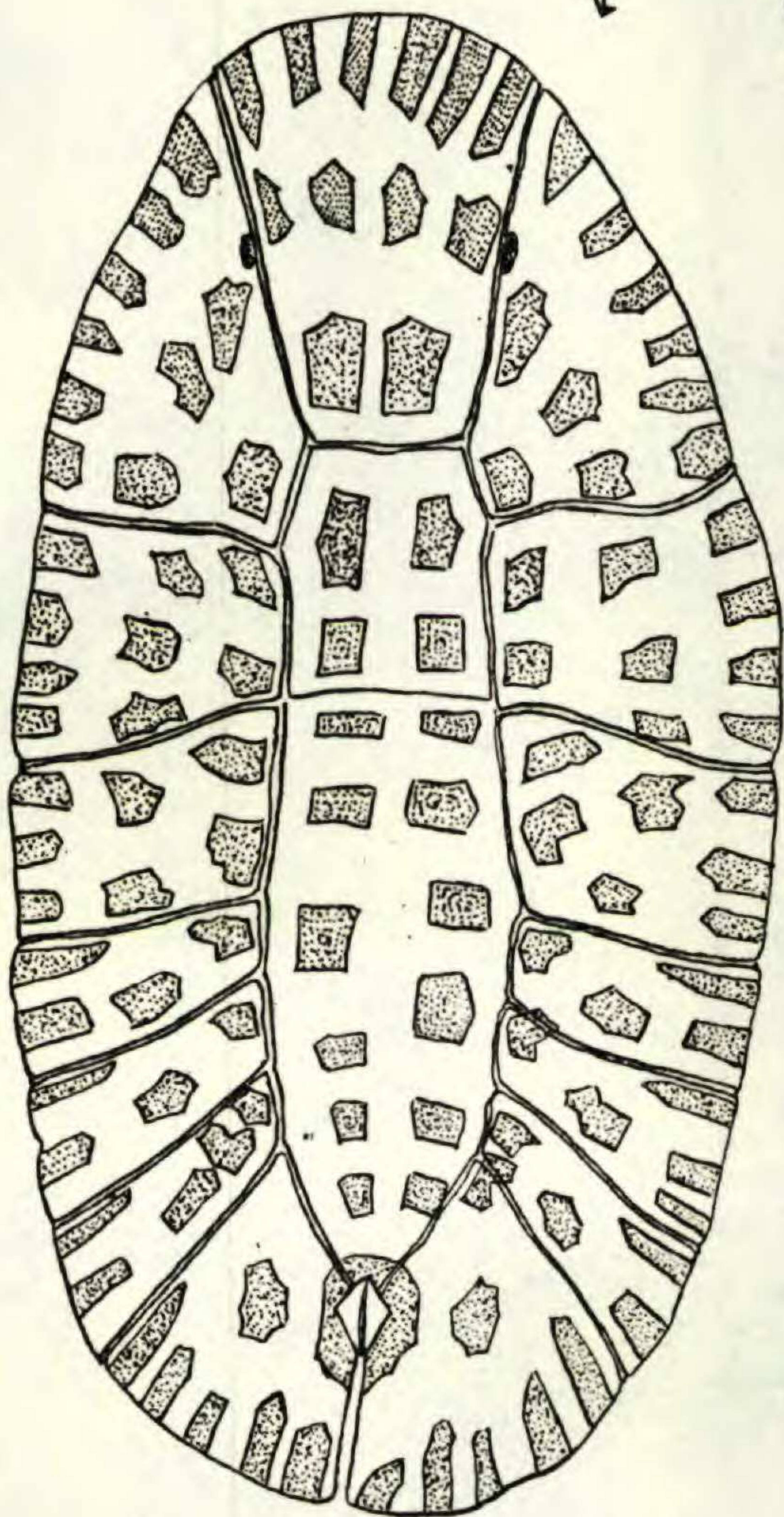


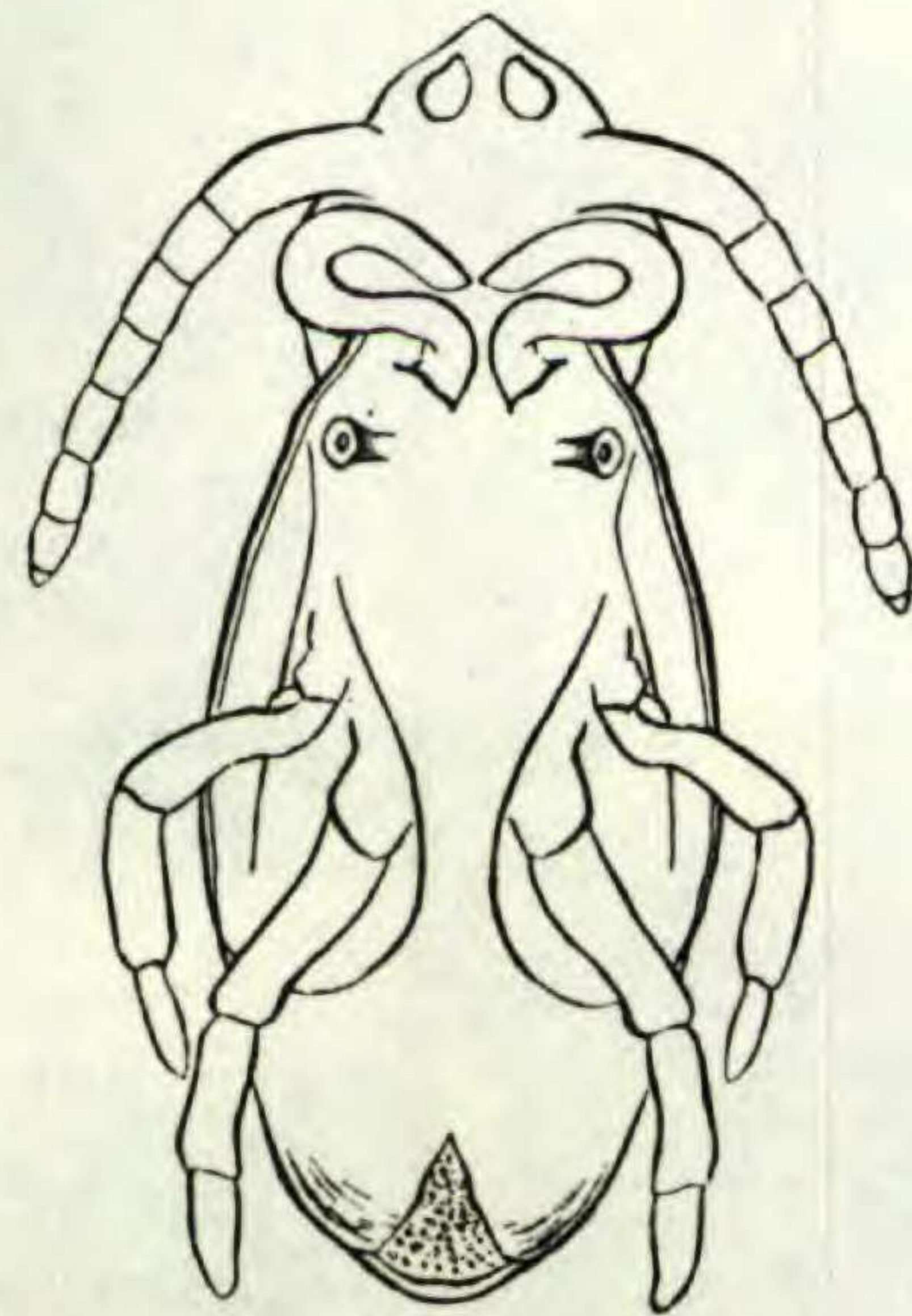
PLATE VIII.



1



2



3

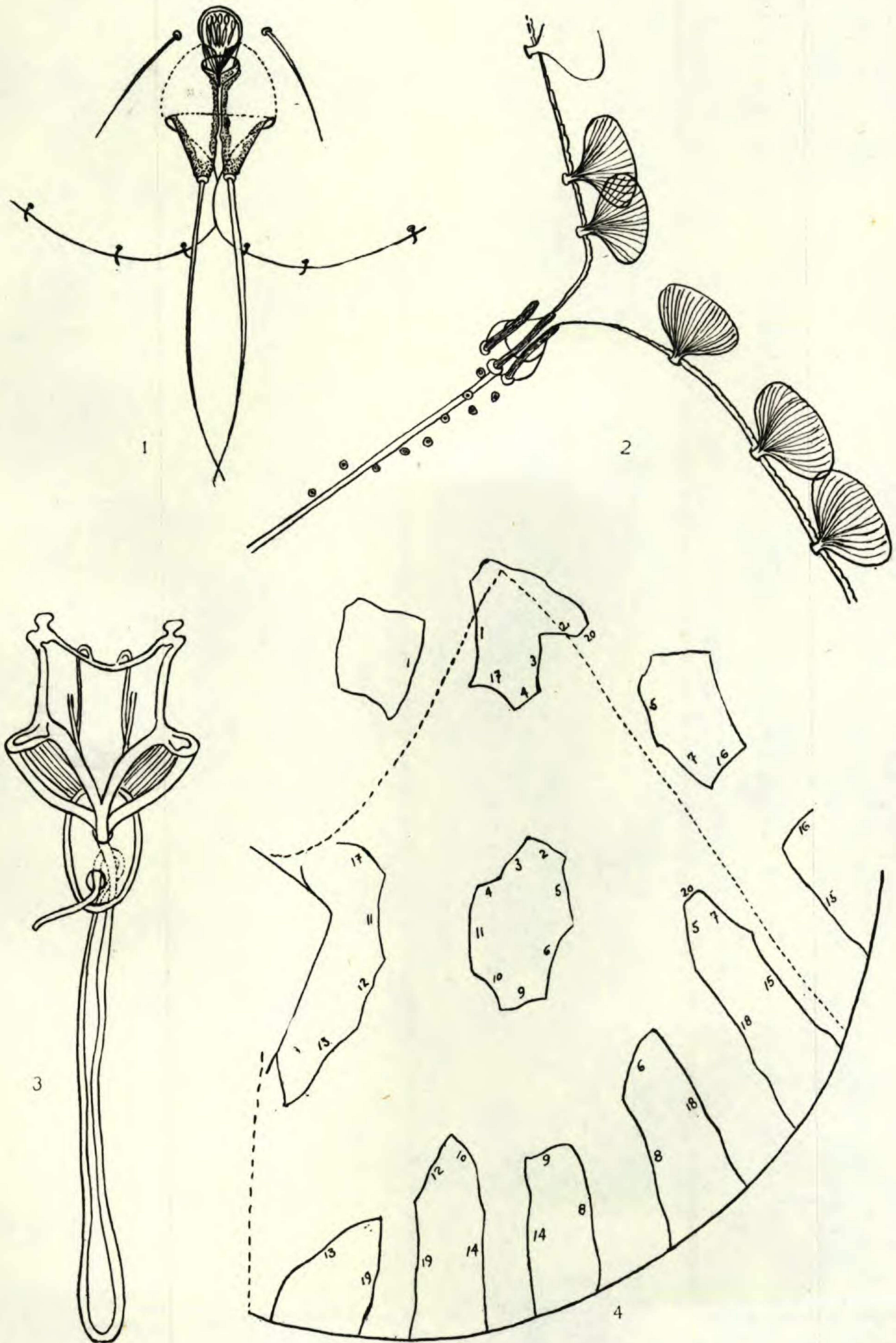


PLATE X.

